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ABSTRACT

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Working Paper No. 53

Selection and Analysis of Social Studies Concepts for Inclusion in Tests of Concept Attainment

Report from the Project on A Structure of Concept Attainment Abilities

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SELECTION AND ANALYSIS OF SOCIAL STUDIES CONCEPTS FOR INCLUSION IN TESTS OF CONCEPT ATTAINMENT

By B. Robert Tabachnick
Evelyn B. Weible, and Dorothy A. Frayer

Report from the Project on A Structure of
Concept Attainment Abilities
Robert E. Davidson, Lester S. Golub,
Herbert J. Klausmeier, Thomas A. Romberg,
B. Robert Tabachnick, and Alan M. Voelker,
Principal Investigators
Margaret L. Harris, Project Manager

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Wisconsin Research and Development
Center for Cognitive Learning
The University of Wisconsin
Madison, Wisconsin

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The Wisconsin Research and Development Center for Cognitive Learning focuses on contributing to a better understanding of cognitive learning by children and youth and to the improvement of related educational practices. The strategy for research and development is comprehensive. It includes basic research to generate new knowledge about the conditions and processes of learning and about the processes of instruction, and the subsequent development of research-based instructional materials, many of which are designed for use by teachers and others for use by students. These materials are tested and refined in school settings. Throughout these operations behavioral scientists, curriculum experts, academic scholars, and school people interact, insuring that the results of Center activities are based soundly on knowledge of subject matter and cognitive learning and that they are applied to the improvement of educational practice.

This Working Paper is from the Project on the Structure of Concept Attainment Abilities in Program 1. The general objectives of this project are to identify basic concepts in language arts, mathematics, science, and social studies appropriate at a given grade level; to develop tests to measure achievement of these concepts; and to develop and identify reference tests for cognitive abilities. These will be used to study the relationships among learned concepts in various subject matter areas, cognitive abilities, and possibly, certain cognitive styles. The results of these will be a formulation of a model of structure of abilities in concept attainment.

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ABSTRACT

Major social studies concepts taught to fourth graders in Madison, Wisconsin were identified by examining the school district course of study and social studies textbooks and by consulting central office supervisors and teachers. The concepts identified in this manner fe into three major categories: Geographic Region, Man and Society, and Map and Globe Study. Ten concepts were randomly selected from each category for inclusion in tests of concept attainment. Each of the selected concepts was analyzed to determine its constituent teachable elements. The analysis of a concept formed the basis for writing items to test its attainment. Analyses of all selected concepts and illustrative examples of test items are presented in the paper.

I

INTRODUCTION

The general objectives of the Concept Attainment Abilities Project of the Wisconsin Research and Development Center for Cognitive Learning are as follows:

1. To identify basic concepts in language arts, mathematics, social studies,and science appropriate at the fourth-grade level,
2. To develop tests to measure achievement of these concepts,
3. To identify reference tests for cognitive abilities,
4. To study the relationships among levels of concept attainment in various subject matter areas and cognitive abilities, and
5. To formulate a model of abilities in concept attainment.

The identification of basic concepts and development of tests in the area of social studies will be described in this paper. The focus will be on the methods of determining social studies concepts appropriate for use in the study and of analyzing concepts prior to writing test items. Similar working papers, dealing with identification of concepts and development of tests, have been written for the areas of language arts, mathematics, and science.

To identify concepts and test their attainment, we must begin by clarifying what is meant by "concept." The definition of the term "concept" which was used to guide selection of concepts for this study was that of Bourne (1966): "A concept exists whenever two or more distinguishable objects or events have been grouped or classified together and set apart from other objects on the basis of some common feature or property characteristic of each" (p. 1). Further clarification of this definition of "concept" has been provided by Klausmeier, Sterrett, Frayer, Lewis, Lee, and Bavry (1969): "Objects and events may be put into the same category on the basis of their criterial attributes. The category is usually given a name. In turn, the word that represents the category may be defined in terms of the criterial attributes of the category.... Concepts may be defined in terms of their intrinsic dimensions or attributes. The dimensions or attributes are abstracted as being alike or the same in otherwise dissimilar objects and thus define the concept from an objective point of view. For example, the attributes which allow some objects to be classified as oranges and others as lemons are size, color, shape, and taste" (p. 3).

The ideas of Bourne and Klausmeier led to the formulation of general criteria for selecting concepts to be tested in the study: (1) the concept must refer to a category of objects or events that may be defined on the basis of intrinsic characteristics common to members of the category, and (2) the concept must have a one- or two-word name.

Concepts may be defined on bases other than that of intrinsic attributes. For example, some concepts may be defined on the basis of

a common use for their examples. Food is an example of a concept defined on the basis of use. Also, concepts may be described by the associations which an individual has to a concept example or to a concept name. The word "dog" may evoke the associations "fear," "shaggy," and "large" in a particular child. Both definitions on the basis of use and descriptions by association, however, tend to be culturally bound or even idiosyncratic (Klausmeier, et. al., 1969). Definitions on the basis of intrinsic properties, on the other hand, may be more generally agreed upon. The desire to study concepts which would have similar meanings for many people led to the decision to select concepts which could be described on the basis of characteristics common to their examples.

Although a child may acquire a concept without learning the word which represents it, knowledge of the concept name is important in communicating with others. Woodruff (1961) is one of many authors who have stressed the importance of learning the generally accepted name for a concept:

> Language is such a prominent part of the behavior of human beings, that one never acquires an idea of anything without also learning a name for it. The name learned may be one he accepts from others or it may be one he creates for himself. In the first instance his power of communicating with others will be greater than in the second instance. Since we depend so much on communication in life, it is important to guide the learning of symbols toward generally accepted usage. (p. 148).

The point of view that knowledge of the name of a concept is important led to the decision to test only concepts which had generally accepted one- or two-word names.

Thus, the concepts that will be selected and tested in this study are concepts which can be defined in terms of intrinsic characteristics and which have one- or two-word labels. This paper will describe the selection of social studies concepts meeting these criteria, the analysis of the selected concepts in terms of their teachable elements, and the construction of items based on that analysis.

II

SELECTING THE SOCIAL STUDIES CONCEPTS

The children who were to be tested in this study were fourth-grade children in Madison, Wisconsin. Thus, the first consideration was to identify social studies concepts meeting the criteria outlined in Chapter I which would be familiar to fourth-grade children in Madison.

Since the study was to deal with concepts in language arts, mathematics, and science, as well as in social studies, general guidelines were established to assure that similar concept selection procedures would be followed in each subject matter area. These guidelines directed subject matter specialists to identify the major topics in their field, to select three of these major topics for study, and to identify concepts related to each of the three major topics. Following identification of the concepts, the specialists were to select ten concepts randomly from each of the three major topic areas. Thus, a total of thirty concepts would be selected for study from each subject matter field.

Since fourth-grade children were to be tested in the study, fourth-grade social studies programs and textbooks were used as sources of concepts. Although the State of Wisconsin and the Madison School System have curriculum guides which outline a general curriculum se-

quence, no teacher is required to follow these guidelines. The intent of the guides is not to dictate methodology or content, but to avoid repetition and haphazard selection. Also, there is a body of popular textbooks available in each school, but again, the textbooks are considered as "resource materials" to supplement the teacher-planned discussion, projects, discovery activities, field trips, and multimedia instruction in social studies, rather than to form the course of study. Thus, finding a group of 30 concepts that many teachers have included in their unit planning could have been considered nearly impossible. We did not take this view, however, believing it likely there was a certain body of social studies concepts that would be taught within a number of fourth-grade classrooms.

Our first approach was to look at the organization and content of the curriculum guides for the city to determine the major trends in social studies. Discussions with central office supervisors in social studies made clear that no shifts at these grade levels were contemplated before final testing was scheduled to take place. A survey of the curriculum guides and the textbooks produced approximately 200 possible testable concepts.

These concepts were organized into three major areas, "Geographic Region," "Man and Society," and "Map and Globe Study." These three areas seemed to identify the major emphases for the fourth-grade year. Consultation with school district personnel confirmed this, as did a review of the fourth-grade textbooks from which some of the concepts had been drawn. Specification of these three major areas permitted elimination of some concepts. The judgment of the investigator was used to identify the

concepts in each major area which seemed most nearly to meet the following three criteria:

1. Is the concept important enough to warrant the attention given it in this study?
2. Is it possible to describe the concept in terms of characteristics common to its examples?
3. Do the concepts selected vary from abstract to concrete so as to be representative of the range of concepts attainable by a fourth-grade child?

From the set of concepts in each of the three major areas which met these criteria, 10 concepts were selected at random to be used in the study.

To summarize, the basic concepts taught in fourth-grade social studies were identified by using curriculum guides and social studies textbooks as source materials, by tabulating words and ideas in these sources, and by conferring with school district personnel (both central office and teachers). Our knowledge as subject specialists was used to classify the concepts into three areas. Ten concepts were randomly selected from each of the three areas for inclusion in the study. Table 1 lists all of the concepts identified within each area; concepts selected for testing are noted with asterisks.

Two further checks were undertaken to verify the appropriateness of these concepts for fourth-graders. The first check was a survey of all 120 Madison fourth-grade teachers, in which they were asked to respond to three questions concerning each of the selected concepts: (1) Do

Table 1

Major Social Studies Concepts Categorized by Area

Geographic Region	Man and Society	Map and Globe Study
Bay	Agriculture	Area (square miles)
Canal	*Airway	Axis
Climate	Basic Needs	Boundary
*Coastline	*City	Continent
*Delta	Commerce (trade)	*Country
*Desert	Country	Day
Elevation	*Democracy	*Distance
Geography	Economy	Earth
*Gulf	Educational Institution	*East-West (lines of latitude
Harbor	*Exchange	Equator
Highland	Family	*Globe
Hills	Farming	Gravity
Island	Fishing	Hemispheres
Isthmus	Forestry	Legend
Lake	*Government	Map
Location	Industry	*Map Directions
Mountain	Institutions	*Map Measurement
*Mountain Region	International	Meridians
Mountain Pass	*Land Routes	Model
Mountain Peak	Man	Night
Ocean Currents	Man as an individual	*North-South (lines of longitude)
Ocean Tides	Man as a member of a group	Ocean
Peninsula	Manufacturing	Orientation
Plain	Market	Parallels
Precipitation	Nation	*Physical Feature Map
Prairie	Nature	Planet
Ridge	*News	Political Map (of nations, countries)
Region	*Organization	Revolution
*River	President	Rotation
*River Mouth	Republic	*Map Scale
River Source	*Countryside	Sea level-Below sea Level
*Strait	Service organization	Seasons
Subtropical Region	Society	Solar system
Swamp	State	*Symbol Map
Temperature	Suburban	Topographical Map (map of land forms)
Topography	Transportation	
Transitional Region	Urban	
*Tributary	Village	
*Tropical Region	*Waterway	
Waterway		
Weather		
Valley		

*Concepts randomly selected to be tested.

you teach this concept in fourth grade? (2) Do you think your fourth-grade children know the meaning of this concept? (3) Do you think your fourth-grade children would recognize this concept name? Responses indicated that the selected concepts are taught in many Madison fourth-grade classrooms. Only four of the concepts were taught by fewer than 30 of the 39 teachers responding to the questionnaire. Table 2 summarizes their responses to the survey. The most important column for determining the appropriateness of concept selection is "Concept Taught." Also, the majority of teachers predicted that their students would be familiar with the concept names and their meanings.

The second measure of appropriateness of concept selection was a study of reading difficulty by Nelson and Steitz (1969). The 32 children who took part in this study were sampled from three Madison schools and were in the first semester of the fifth grade. The purpose of the study was to determine for each of the 30 concepts whether the children could read the concept name and whether they were familiar in a rudimentary way with its meaning. Each student was asked individually to pronounce the concept name. He was asked to read each word and give its meaning. If the student could not pronounce the word, he was still asked its meaning, on the basis of what the word looked like. Then, if he could not pronounce or give a meaning for the word, the word was pronounced for him, and he was again asked its meaning.

Table 3 shows for each concept the number of students giving the correct pronunciation and the number of students giving the correct

Table 2

A Survey of Social Studies Concepts Taught by
39 Fourth-Grade Teachers in Madison, Wisconsin

Concepts	Concept Taught	Predict Concept Meaning Known to Children	Predict Concept Name Recognized by Children
Airway	26	19	16
City	39	25	23
Coastline	38	32	28
Country	37	30	28
Delta	37	28	26
Democracy	30	21	21
Desert	39	35	33
Direction	39	31	35
Distance	39	30	31
East-West Lines	38	35	29
Exchange	23	20	16
Globe	38	33	34
Government	32	24	22
Gulf	38	31	23
Land Route	31	21	19
Measurement	38	27	27
Mountain Region	39	35	34
News	36	39	31
North-South Lines	38	33	31
Organization	25	20	16

Table 2 (continued)

Concepts	Concept Taught	Predict Concept Meaning Known to Children	Predict Concept Name Recognized by Children
Physical Map	39	26	24
River	38	34	33
River Mouth	39	38	28
Rural	29	26	22
Tributary	39	26	24
Tropical Region	39	33	32
Scale	39	29	27
Strait	36	30	21
Symbol	38	29	25
Waterway	34	24	20

Table 3

Number of Fifth-Grade Students Giving Correct Pronunciation and Correct Meaning for Each Social Studies Concept (Number of Subjects = 32)

GEOGRAPHIC REGION			MAN AND SOCIETY			MAP AND GLOBE STUDY		
CONCEPT	PRONUN-CIATION	MEANING	CONCEPT	PRONUN-CIATION	MEANING	CONCEPT	PRONUN-CIATION	MEANING
1. Desert	28	32	City	32	31	Globe	32	32
2. River	32	31	News	32	30	Direction	28	30
3. Mountain Region	32	29	Exchange	32	30	Distance	28	30
4. Coastline	31	27	Waterway	32	26	Measurement	27	30
5. River Mouth	32	25	Government	30	25	Country	32	29
6. Gulf	32	19	Organization	25	24	Scale	31	25
7. Tropical Region	30	17	Land Route	32	21	Symbol Map	25	21
8. Tributary	19	12*	Airway	31	21	East-West Lines	32	19
9. Delta	28	9*	Rural	18	9*	North-South Lines	32	18
10. Strait	20	5**	Democracy	19	3**	Physical Map	28	11*

* understood by fewer than 50% of children
** understood by fewer than 25% of children

meaning. Only six of the concepts had meanings known to fewer than 50% of the students. These six concepts were: delta, democracy, physical map, rural, strait, and tributary. Only two concepts, democracy and strait, were known to fewer than 25% of the students.

The overall results of the teacher survey and the readability study suggest that the names and meanings of the selected concepts are understood by many fourth-grade children representative of those who will participate in the study.

III

ANALYSIS OF THE CONCEPTS

In order to teach concepts, one must analyze the concept into its teachable elements. In order to test a child's mastery of a concept, one must develop test items directly related to the elements of the concept. This chapter will describe the analysis of the 30 selected social studies concepts.[1] It will also describe the paradigm for testing level of concept attainment (Frayer, Fredrick, & Klausmeier, 1969) which guided the construction of test items based on the analyses.

The analysis of a concept entails the specification of certain kinds of information about the concept and its relationship to other concepts. This information includes intrinsic characteristics, irrelevant characteristics, hierarchical relationships with other concepts, a verbal definition, and lawful relationships with other concepts.

In Chapter I it was noted that a concept may be defined on the basis of features or properties which are common to all examples of the concept. Each of the 30 concepts was, therefore, described in

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[1] Research and development related to the analysis of a concept and measurement of concept attainment has been the central emphasis of Project 101 of the Wisconsin R & D Center. The analysis of a concept was conceptualized by Professor Herbert J. Klausmeier and Dr. Dorothy A. Frayer. Refinement of the procedures for concept analysis was carried out by the members of a Seminar on Concept Learning conducted by Professor Klausmeier during the second semester 1969-1970.

terms of its intrinsic attributes. These intrinsic characteristics of a concept were called "relevant attributes." For example, the relevant attributes of globe are that it is spherical and a representation of the earth.

In addition to characteristics common to all examples of a concept, there are characteristics pertinent to certain specific examples of the concept in the real world, but not common to all examples. These characteristics which vary among examples of the concept were called "irrelevant attributes." For example, an irrelevant attribute of globe is size. A globe may be large or small as long as it is spherical and is a representation of the earth.

One approach used to determine the relevant and irrelevant attributes of a concept was to think of as many different examples of the concept as possible. Those characteristics common to all of the examples were usually relevant attributes of the concept. Characteristics which occurred only in particular examples were irrelevant attributes of the concept. As an example of this type of approach, think of examples of the concept delta. A delta is always a type of river mouth where land was formed when soil was deposited from that river. The relevant attributes would be that a delta is part of a river mouth, is land formed by the river, and grows larger as more soil carried by the river is deposited. Every delta in the world would share these characteristics. However, not every delta in the world is at the end of the Mississippi River, not every delta has good land for growing cotton, not every delta is exactly fan-shaped;

therefore, these characteristics of location, kind of soil, and shape are irrelevant attributes of the concept delta.

As noted above, concept examples exhibit all the characteristics relevant to a concept but vary in the irrelevant characteristics which they exhibit. Nonexamples lack one or more of the relevant characteristics. Relevant and irrelevant attributes of a concept were, therefore, considered in choosing examples and nonexamples for testing concept mastery. Examples were used which showed variation in irrelevant characteristics. Nonexamples were selected, each lacking one of the relevant attributes. In the case of globe, for instance, large and small globes were used as examples. A wall map (which lacks the relevant characteristic of spherical shape) and a basketball (which lacks the relevant characteristic of being a representation of the earth) were used as nonexamples.

As the relevant attributes of various concepts were determined, a clearer picture of hierarchical relationships between the concepts emerged. For example, both organization and government have the relevant attribute of having to do with "two or more people or groups of people." Government, however, has the additional attribute of having to do with "governing these people." Thus, government could be considered to be a kind of organization. Another way of expressing this relationship is to say that government is a subordinate concept to organization.

In each case where concepts shared relevant attributes, the more general concept was called the "supraordinate concept," the more specific concept the "subordinate concept." To illustrate the relationships

that were discovered when we analyzed the selected concepts we have included hierarchical charts of each area. Figure 1 shows hierarchical relationships among concepts in the area of Geographic Region; Figure 2, relationships in the area of Man and Society; and Figure 3, relationships in the area of Map and Globe Study. These hierarchical charts do not, of course, organize all possible relevant concepts related to the categories of Geographic Region, Man and Society, and Map and Globe Study. The hierarchical charts organize only the major concepts identified in the school course of study in social studies and in social studies texts used by the children participating in the study. This accounts, in part, for the "lopsided" nature of the hierarchies, for the inclusion of some concepts of lesser importance, and for the exclusion of some concepts of greater importance.

Another kind of information specified for each concept was a verbal definition. In some cases, the definition listed all of the relevant attributes of a concept. In other cases, the definition gave the name of a supraordinate concept and, in addition, listed the relevant attributes which distinguish the concept defined from the supraordinate concept. The relevant attributes which distinguish a concept from its supraordinate were called "criterial attributes." For example, mountain region was defined by noting that its supraordinate is land area, and that it is distinguished from other land areas by the fact that is has peaks and valleys, and is higher and colder than nearby land areas.

Where possible, the definition for a concept that was used was taken from a fourth-grade textbook, or a combination of several textbook defini-

FIGURE 1

GEOGRAPHIC REGION: A CHART OF HIERARCHICAL RELATIONSHIPS AMONG CONCEPTS

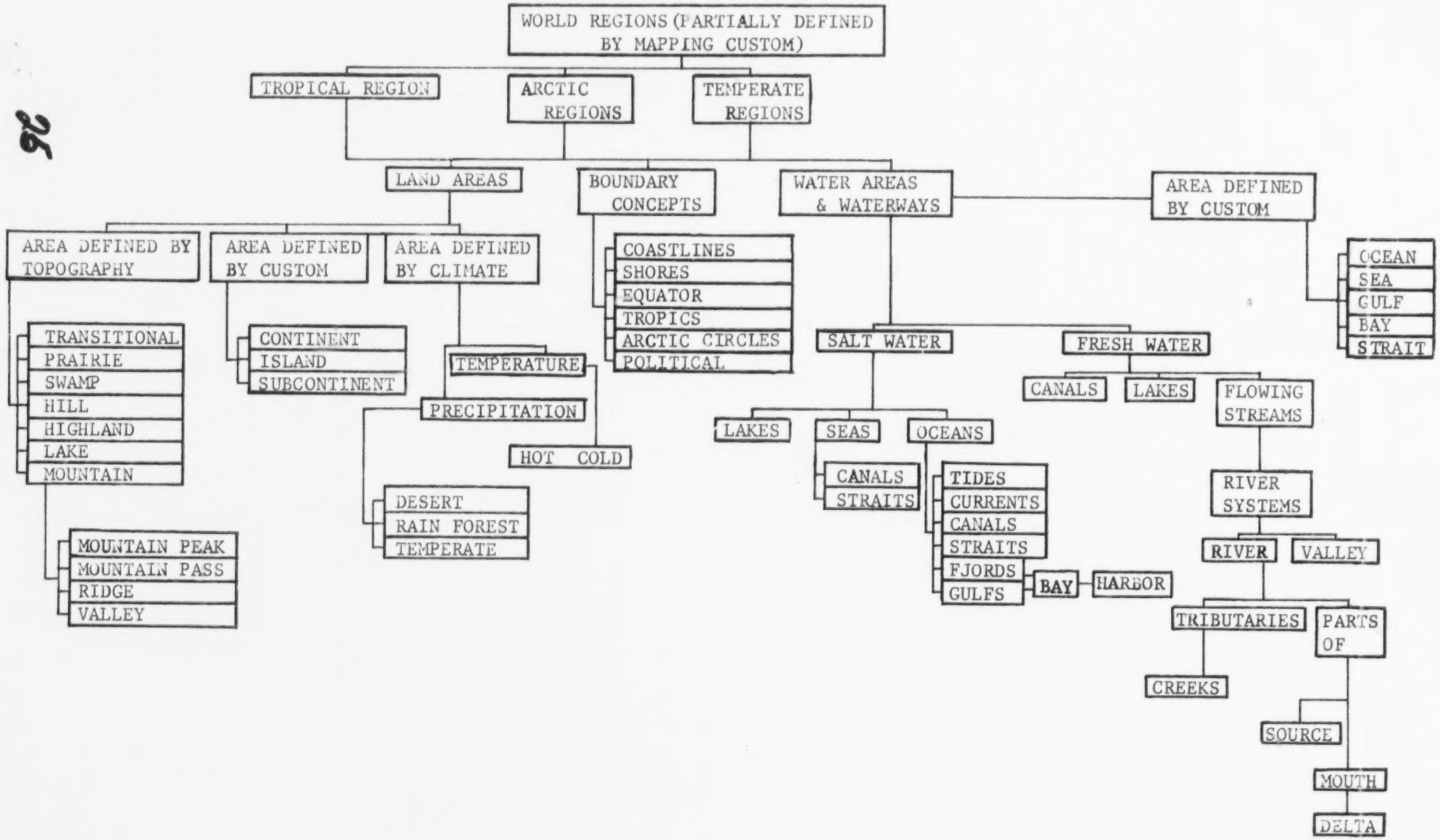


FIGURE 2

MAN AND SOCIETY: A CHART OF HIERARCHICAL RELATIONSHIPS AMONG CONCEPTS

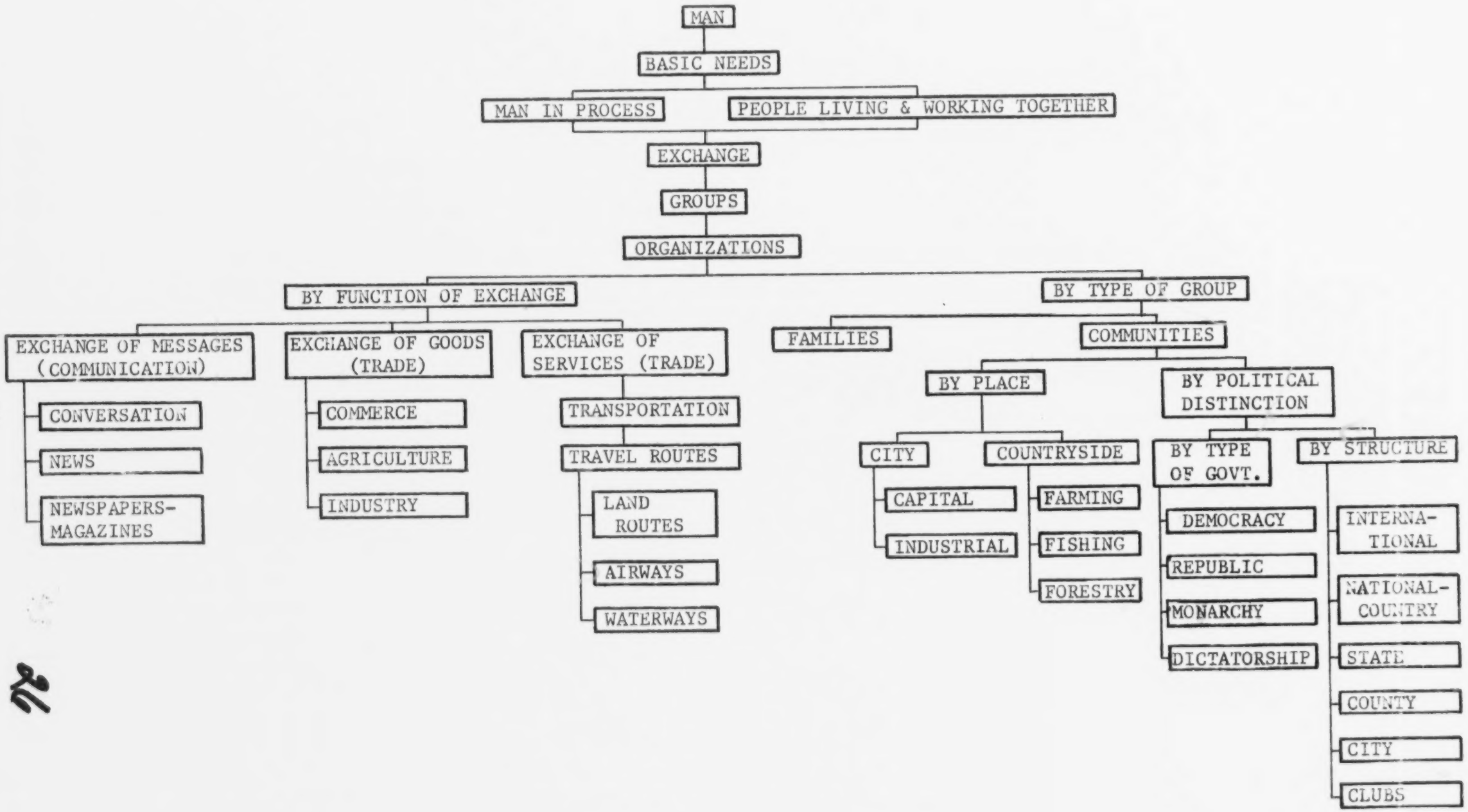
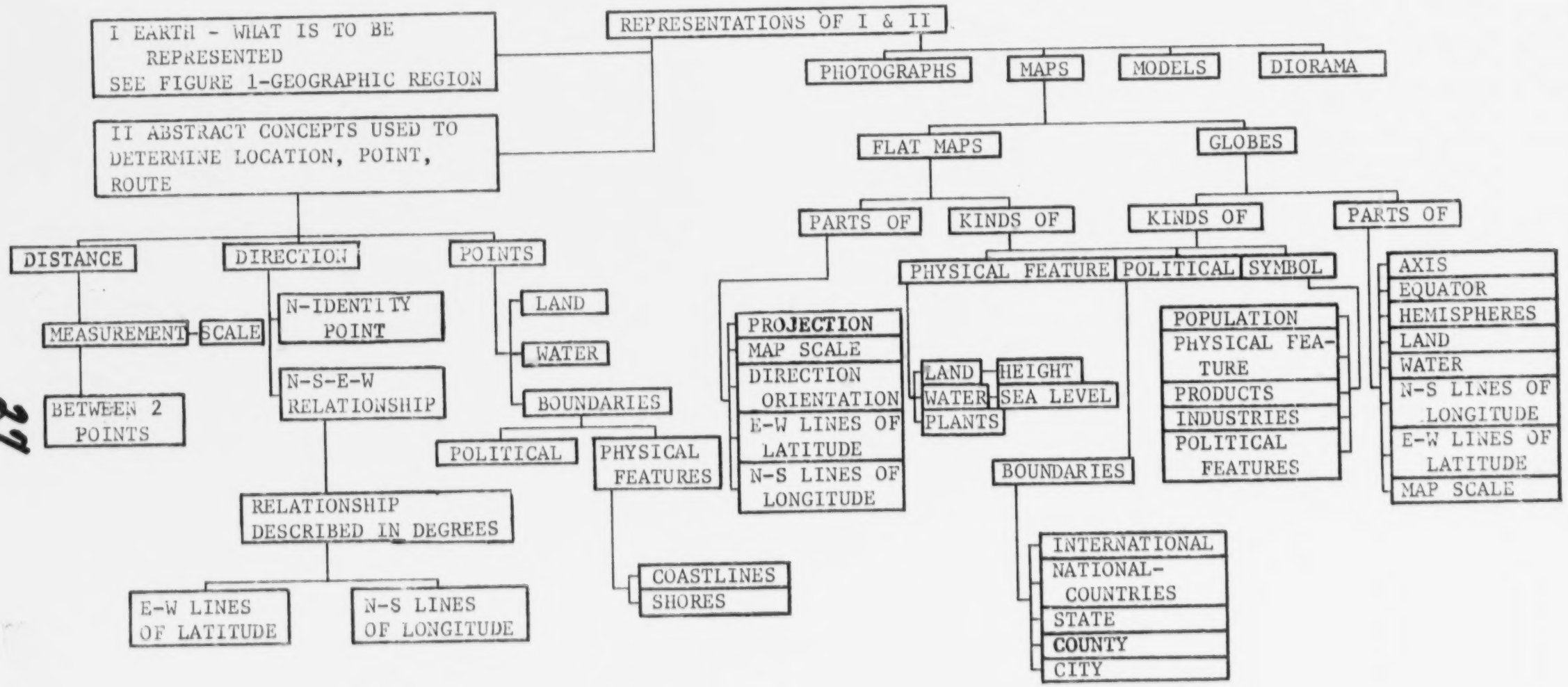


FIGURE 3

MAP AND GLOBE STUDY: A CHART OF HIERARCHICAL RELATIONSHIPS AMONG CONCEPTS



tions. Where this was not possible the definition from an elementary dictionary was adopted or adapted. For some of the concepts, especially some of the compound-word concept labels, providing a good definition was difficult. Even though the real meaning behind the concept label "map directions" might be better stated in the phrase, "directions taken from a map," the longer phrase was not used as a label because of the awkwardness of its length. Instead, the meaning of "direction" as applied to map usage was considered and a simply worded definition was written to describe this concept: "A map direction tells which way to go from any point on a map in order to face or move towards the North Pole." This definition incorporated the intrinsic characteristics of direction being something moving along a line toward some fixed point or destination and the fact that most maps will use North, South, East, and West for orientation.

A final type of information ascertained for each concept was its relationship to another concept. This relationship was often a principle stating a lawful relationship between two concepts. In other cases it described a probabilistic relationship which was usually, but not always true. An example of a statement of relationship is: "When symbols on a symbol map are used to show physical features, it is also a physical feature map." This statement related the concepts symbol map and physical feature map.

The analyses of the 30 concepts that were selected to be included in this study are presented in the Appendix. In these analyses, the concept being analyzed is called the "target concept." The name which is given to the concept is called the "target concept label." For each concept, a definition is given. Some definitions give the name of a supraordinate concept and the criterial attributes which distinguish the target concept from the supraordinate. Other definitions simply list all relevant attributes of the target concept.

The analysis of each concept indicates which concepts are supraordinate and which subordinate to the target concept. In addition, many analyses include "coordinate concepts." Coordinate concepts have the same supraordinate concept but different criterial attributes than the target concept. For example, desert, mountain region, and tropical region are coordinate concepts since they have the same supraordinate, land area, but different criterial attributes.

In each analysis the criterial attributes which distinguish the target concept from its supraordinate are explicitly listed. Also, other attributes are listed which are relevant to the concept but do not distinguish it from its supraordinate. Many irrelevant attributes are noted for each target concept. Examples and nonexamples in either verbal or pictorial form are given for each concept. Finally, the analyses include statements showing the relationship of the target concept to at least one other concept.

To develop these analyses, item writers consulted encyclopedias, textbooks, and dictionaries in order to identify authentic and intrinsic

attributes and other characteristics of every concept, as well as to plan maps, illustrations, and questions that could reasonably be expected to test fourth-graders' attainment of each concept.

The next step was that the "working group" for the project, i.e., the item writer from each subject area, an experienced elementary teacher who advised about readability, and the project manager, met and critiqued every analysis. The members of this group critiqued any part of an analysis of a concept on any logical basis. For instance, bases of criticism include inappropriateness of the analysis for fourth-grade children or failure of a part of the analysis to fit the description of the information required. In addition, the group suggested various additions or improvements in form. After these revisions were incorporated into analysis the item writer and the principal investigator went over them again. The principal investigator assumed primary responsibility for their authenticity and had the power of final decisions.

The analyses, then, summarized the teachable elements of each concept. The next step was to devise test items to test knowedge of these elements. Items were constructed in accord with a paradigm for testing level of concept attainment, developed by Fredrick, Frayer, and Klausmeier (1969). This paradigm consists of 12 types of questions which can be used to test knowledge of a given concept. The 12 types of items which comprise the paradigm are as follows:

1. Given the name of an attribute, select the example of the attribute.
2. Given an example of an attribute, select the name of the attribute.

3. Given the name of a concept, select the example of the concept.

4. Given the name of a concept, select the nonexample of the concept.

5. Given an example of a concept, select the name of the concept.

6. Given the name of a concept, select the relevant attribute.

7. Given the name of a concept, select the irrelevant attribute.

8. Given the meaning of a concept, select the name of the concept.

9. Given the name of a concept, select the meaning of the concept.

10. Given the name of a concept, select the supraordinate concept.

11. Given the name of a concept, select the subordinate concept.

12. Given two concepts, select the principle relating them.

IV

WRITING THE TEST ITEMS

The nature of each item of the test was determined with respect both to content and to the type of task involved. The content of the items for a given concept was based on the analysis of that concept as presented in the Appendix. The tasks represented by the items were based on the paradigm for testing level of concept attainment which was described in Chapter III. Although this test development strategy specified the general nature of each item, several decisions were left to the item writers:

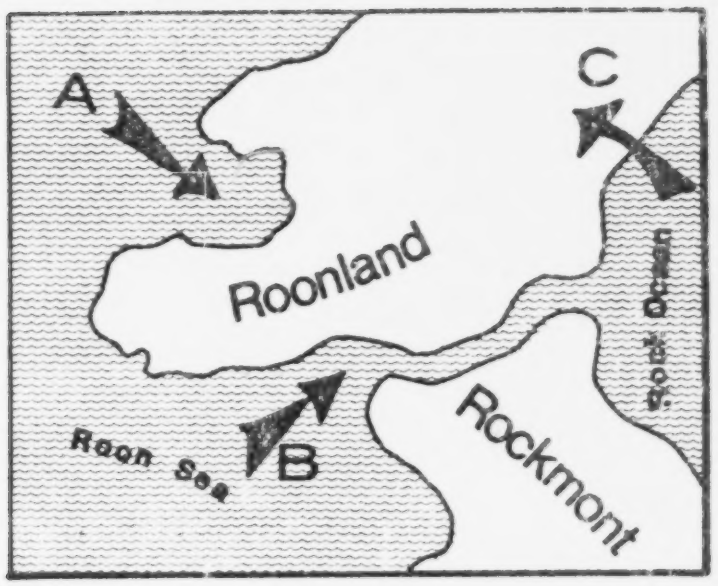
1. Selection of the attribute tested in item types 1 and 2
2. Selection of the examples for item types 3 and 5
3. Selection of the nonexample for item type 4
4. Selection of the form for writing the items
5. Selection of the incorrect choices for each item

Some standardization took place in the form for writing items. Since the study was to compare performance on each task type for concepts in each of four subject matter areas, item writers for all subject matter areas met frequently to discuss items for each type of task. The intent was to assure that the tasks represented by the items were the same, even if there was some variation in actual wording. Formulas for each type of question were developed. For example, the

type 11 question presents the task of selecting a subordinate concept after being given the name of the concept. This type of question about the concept tributary might be asked in any of these ways: (a) Which of these is a kind of tributary? (b) ___?___ is a kind of tributary. (c) One kind of tributary is:

In developing incorrect foils, less standardization was needed and the item writers could use more imagination in their production. Several considerations related to readability were, however, kept in mind while writing these foils. All options for all test items were kept short and concise so as to limit the actual amount of reading. The intent was to reduce the number of incorrect responses to test items caused by reading inadequacies of the students rather than their failure to comprehend a concept at a particular level. The vocabulary used in all options for all items was kept as simple as possible so as to reduce the number of incorrect responses caused by reading difficulties alone.

The plausibility of the incorrect choices was also an important consideration. In the item in Figure 4 each of the incorrect answers is fairly plausible. The letters A and C are placed on examples of other geographic terms the student might well have studied — a gulf and a peninsula. Two to five options were used for each test item depending on its length and complexity, as well as upon the actual availability of "good" options. For some concepts at a particular task level, only two logical options existed at a fourth-grade level.



Which arrow points to a strait?

Fig. 4 Item Type 3 for the Concept Strait

Thus, three basic objectives guided the construction of items:

1. To present the types of tasks outlined in the paradigm for testing level of concept attainment.
2. To minimize the amount of reading and simplify vocabulary
3. To construct plausible distractors

Illustrative items of each task type for the concept river mouth follow. The item numbers correspond to the task types of the paradigm for testing level of concept attainment which was presented in Chapter III. Asterisks indicate the correct answer for each sample item.

Concept: RIVER MOUTH

1. Given: name of attribute

   Select: example of attribute

   Item Example:

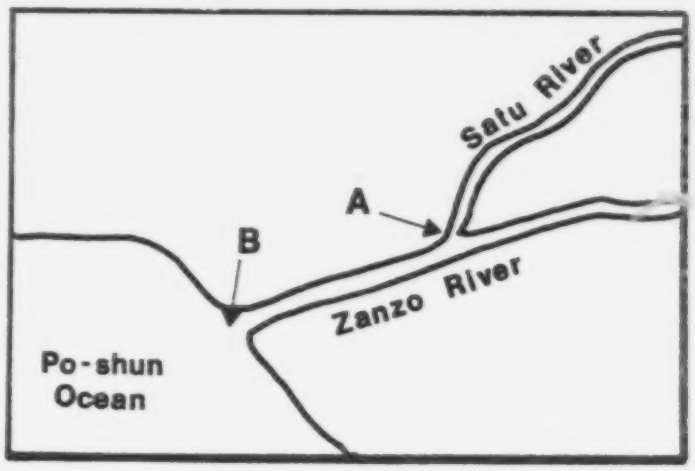
   Both arrows A and B point to a place where a river:

   *A. has its end

   B. divides

   C. forms rapids

   D. has its source



2. Given: example of attribute

   Select: name of attribute

   Item Example:

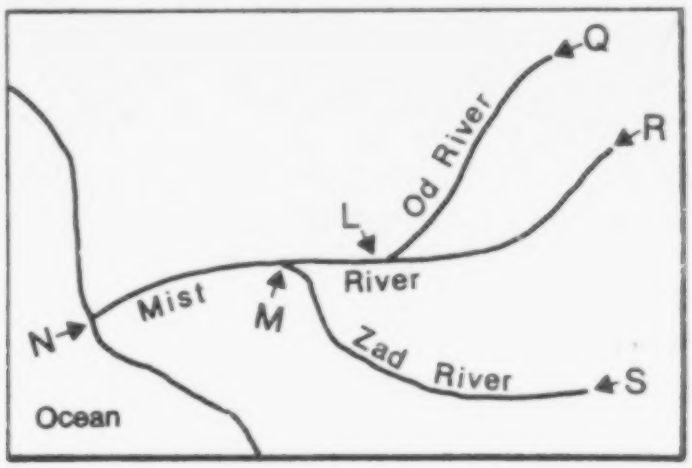
   Which set of letters names the points where each of the rivers in the drawing ends?

   A. QRS

   B. RLN

   *C. LMN

   D. N



3. Given: name of concept

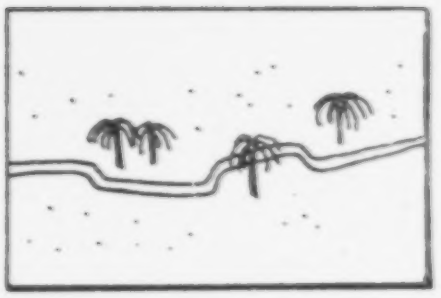
Select: example of concept

Item Example:

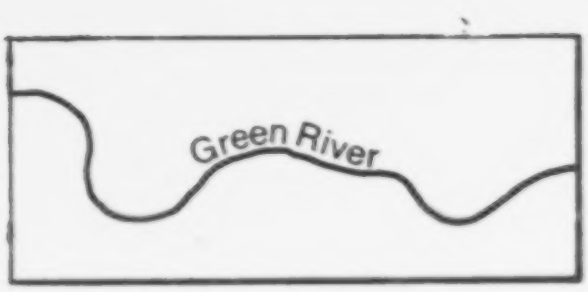
Which picture shows a river mouth?

*A.

B.



C.



4. Given: name of concept

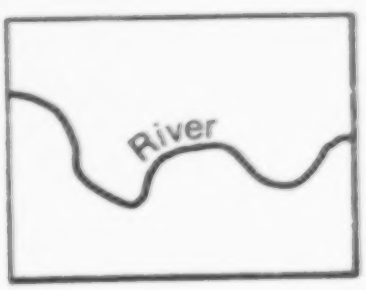
Select: nonexample of concept

Item Example:

Which picture does NOT show a river mouth?

A.

*B.



C.

5. Given: example of concept

   Select: name of concept

   Item Example:

   This picture shows:

   A. the source of a river

   *B. a river mouth

   C. a tributary

   D. a strait

6. Given: name of concept

   Select: relevant attributes of the concept

   Item Example:

   What is always true about a river mouth?

   A. It is at sea level.

   B. It runs into an ocean.

   C. It forms a rapids.

   *D. It is where the river runs into different waters.

7. Given: name of concept

   Select: irrelevant attributes of the concept

   Item Example:

   What is NOT always true about a river mouth?

   A. It is wider than the river itself.

   B. It is where the river stops.

   *C. It is a mile wide.

   D. It meets a larger body of water.

8. Given: definition of concept

Select: name of concept

Item Example:

The place where a river enters a different body of water and ends is called a:

A. tributary

*B. river mouth

C. river source

D. lock

9. Given: name of concept

Select: definition of concept

Item Example:

A river mouth is:

A. where two rivers meet

B. the part of the river that is without a current

C. where a river begins

*D. the place where a river enters a different body of water and ends

10. Given: name of concept

Select: supraordinate concept

Item Example:

A river mouth is a kind of:

A. valley

B. gulf

C. strait

*D. waterway

11. Given: name of concept

Select: subordinate concept

Item Example:

Which of these is one kind of a river mouth?

*A. a delta

B. a peninsula

C. a strait

D. a river source

12. Given: name of two concepts

Select: statement which relates the two concepts

Item Example:

What is true about a river mouth and a gulf?

A. A river mouth sometimes flows around a gulf.

B. A gulf is smaller than a river mouth.

*C. A river mouth sometimes flows into a gulf.

D. A gulf is a source of a river mouth.

Similar items were constructed for each of the 30 selected concepts. The complete set of test items is contained in Working Paper No. 54 of the Wisconsin Research and Development Center for Cognitive Learning.

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APPENDIX

Analyses of Thirty Fourth-Grade Social Studies Concepts

CONCEPT ANALYSIS

Target Concept Label:

Coastline
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

A coastline is a boundary at a place where the land meets the water of an ocean or sea.

(Definition Tested: A coastline is a place where the land meets the water of an ocean or sea.)

Supraordinate Concept(s):

Boundary

Coordinate Concept(s):

Border lines between countries
State boundaries

Subordinate Concepts(s):

Kinds of coastlines: sandy beaches, rocky cliffs, straight, curving

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A coastline:
1. is where the land ends
2. is where the sea begins
3. is the boundary between
4. is usually at land bordering an ocean or sea

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

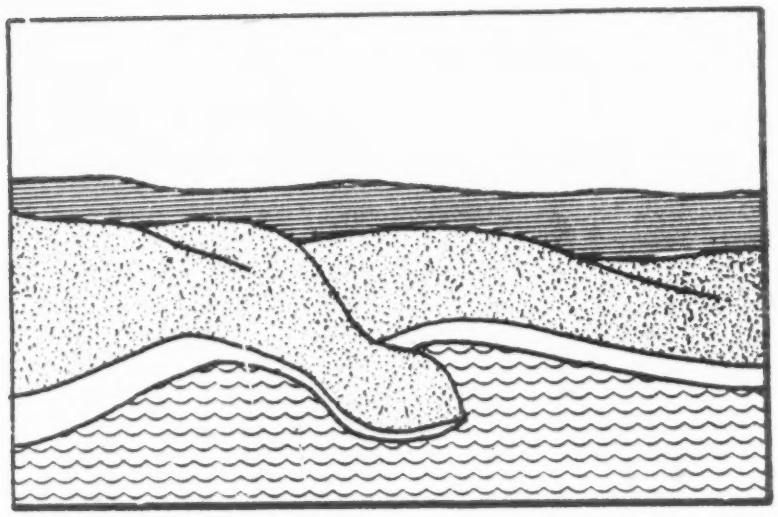
Other attributes relevant to coastline are those of its supraordinate, <u>boundary</u>.

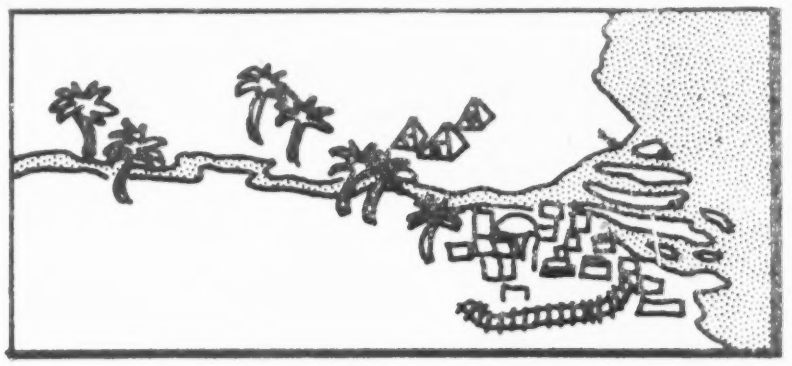
Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

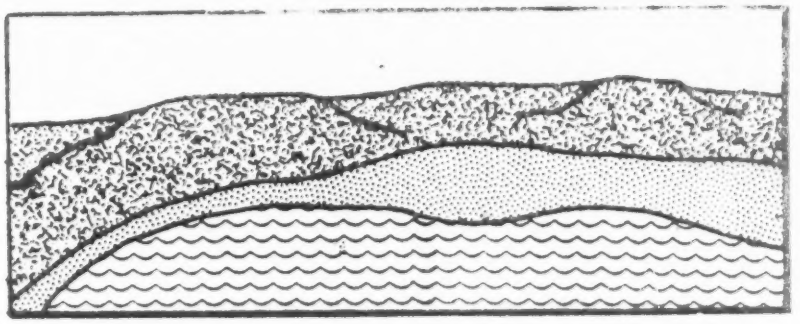
Irrelevant attributes of coastline include:

1. the type of land
2. which particular ocean or sea it borders
3. type of vegetation growing on the land

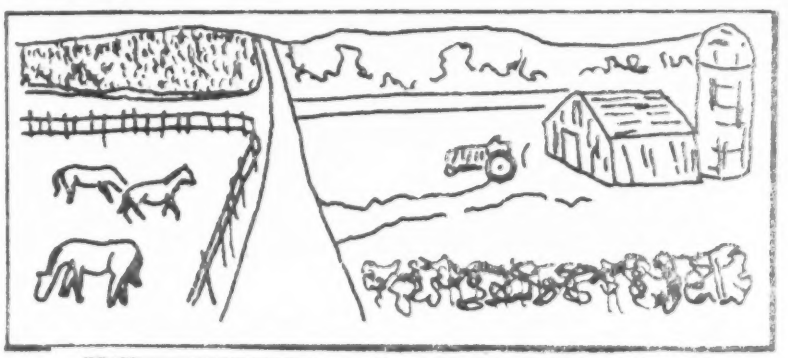
Concept examples include the following:

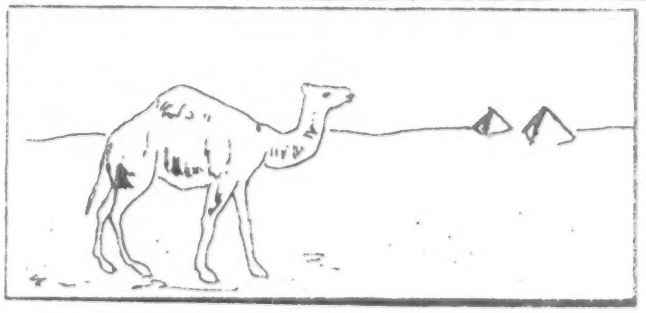






Concept non-examples include the following:





Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A land route can go along a coastline.

CONCEPT ANALYSIS

Target Concept Label:

Delta
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A delta is a river mouth which has some land which was formed when soil was deposited at the mouth of that river.

(Definition Tested: A delta is land formed when soil is dumped at the mouth of a large river.)

Supraordinate Concept(s):

River Mouth

Coordinate Concept(s):

River mouths where deltas were not formed

Subordinate Concept(s):

Deltas where crops can be grown
Deltas where crops cannot be grown

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A delta:

1. is newly formed in the process of growing
2. is found at the mouth of a river
3. is found where the river joins a larger body of water and stops
4. is made of land formed by soil carried by the river
5. divides the river into several branches around the land

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

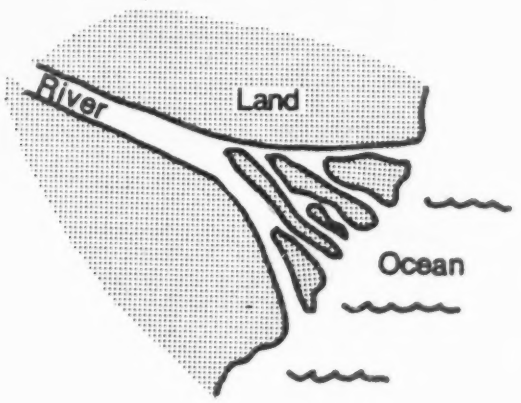
Other attributes relevant to delta are those of its supraordinate, river mouth.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

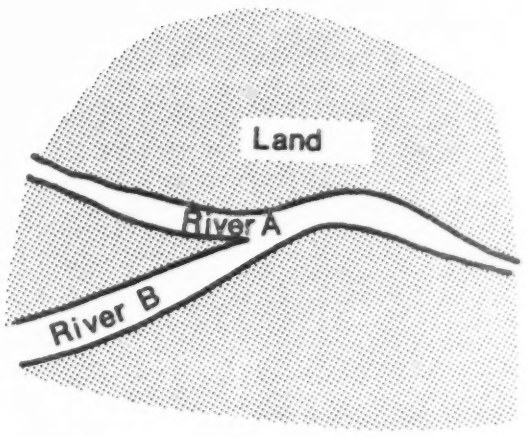
Irrelevant attributes of delta include:

1. the type of soil
2. which river it is a part of
3. the location
4. how quickly it is formed
5. its exact shape

Concept examples include the following:



Concept non-examples include the following:



Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely <u>not</u> be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A <u>delta</u> can change a <u>coastline</u>.

CONCEPT ANALYSIS

Target Concept Label:

Desert
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A desert is a climate region with a small amount of rainfall and few plants growing.

Definition Tested: A desert is a place where there is not enough rainfall for many plants to grow.)

Supraordinate Concept(s):

Climate Region

Coordinate Concept(s):
Mountain region
Jungles

Subordinate Concept(s):

Deserts with various land features
Rocky or sandy

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A desert
1. is an area with very little rainfall
2. is an area where few plants grow
3. is an area where temperature varies greatly from day to night
4. is an area where the plants that do grow need little water

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

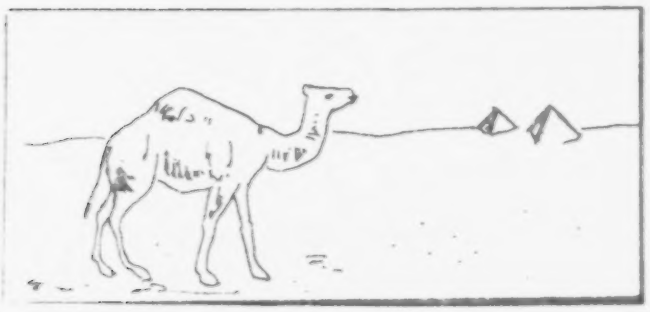
Other attributes relevant to desert are those of its supraordinate, climate region, i.e., the area is defined and described by its climate rather than topography or mapped location.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

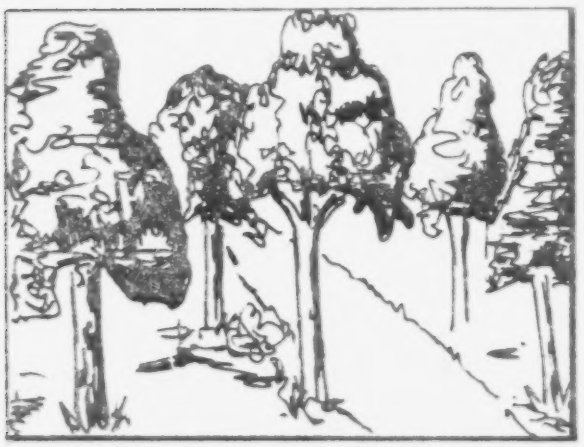
Irrelevant attributes of desert include:

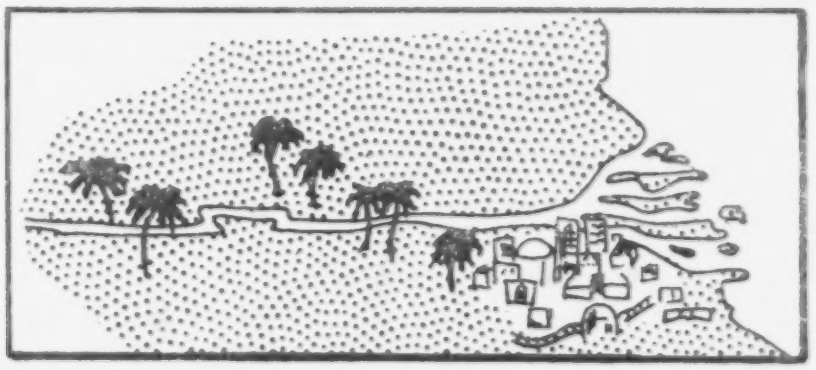
1. the exact kinds of plants
2. the location of the area
3. its topography
4. the exact amount and frequency of rainfall

Concept examples include the following:



Concept non-examples include the following:





Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

There are deserts in the Tropical Region.

CONCEPT ANALYSIS

Target Concept Label:

Mountain Region
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

A mountain region is a land area with peaks and valleys that is higher and cooler than nearby land areas.

(Definition Tested: A mountain region is a high, cooler land region with peaks and valleys.)

Supraordinate Concept(s):

Land area

Coordinate Concept(s):

Desert

Subordinate Concept(s):

Volcanic mountain region — Faultback mountain region
Block mountain region — Dome mountain region

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A mountain region:
1. has peaks and valleys
2. is higher than nearby land areas
3. is colder than nearby land areas

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.

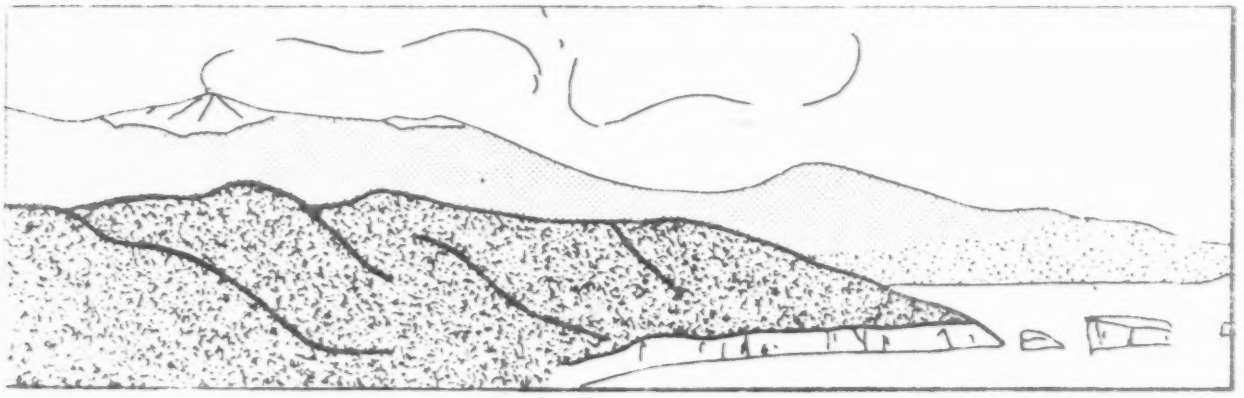
Other attributes relevant to mountain region are those of its supraordinate, land area.

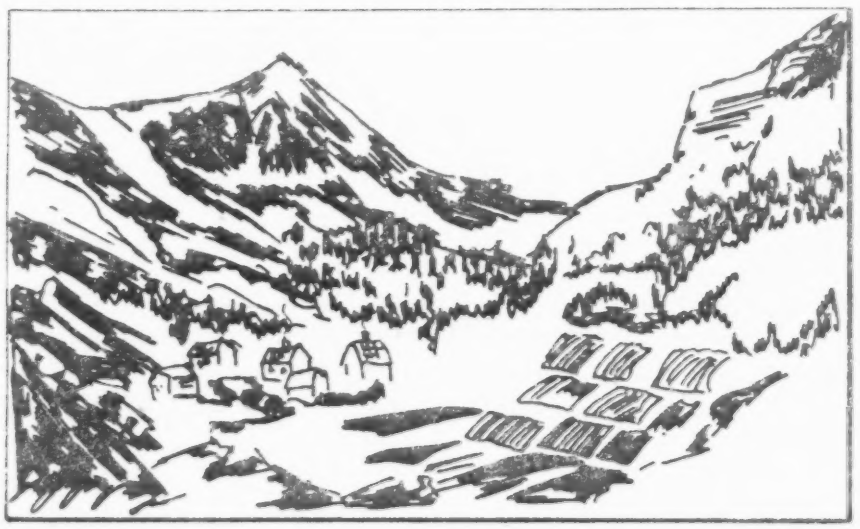
Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of mountain region include:

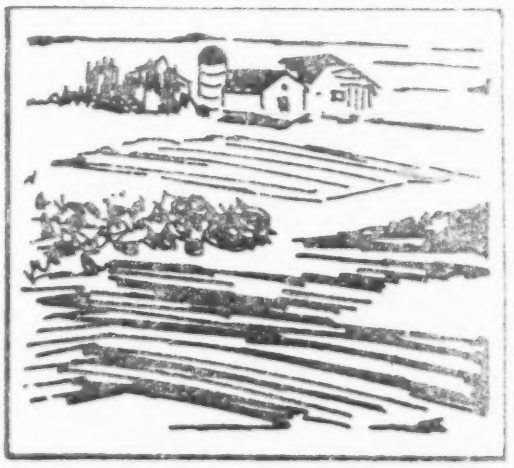
1. the number of mountains
2. the exact height of the mountains
3. the shape of the peaks
4. the geographical location of the region

Concept examples include the following:





Concept non-examples include the following:



Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A mountain region is wetter than a desert.

CONCEPT ANALYSIS

Target Concept Label:

River
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

A river is a waterway that is a large, flowing stream of water.

(Definition Tested: A river is a large, flowing stream of water.)

Supraordinate Concept(s):

Waterway

Coordinate Concept(s):

Lakes
Oceans

Subordinate Concept(s):

Creek
Tributary

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A river:

1. is a large, flowing stream of water
2. flows from higher to lower land
3. has a source (beginning)
4. has a mouth (ending)

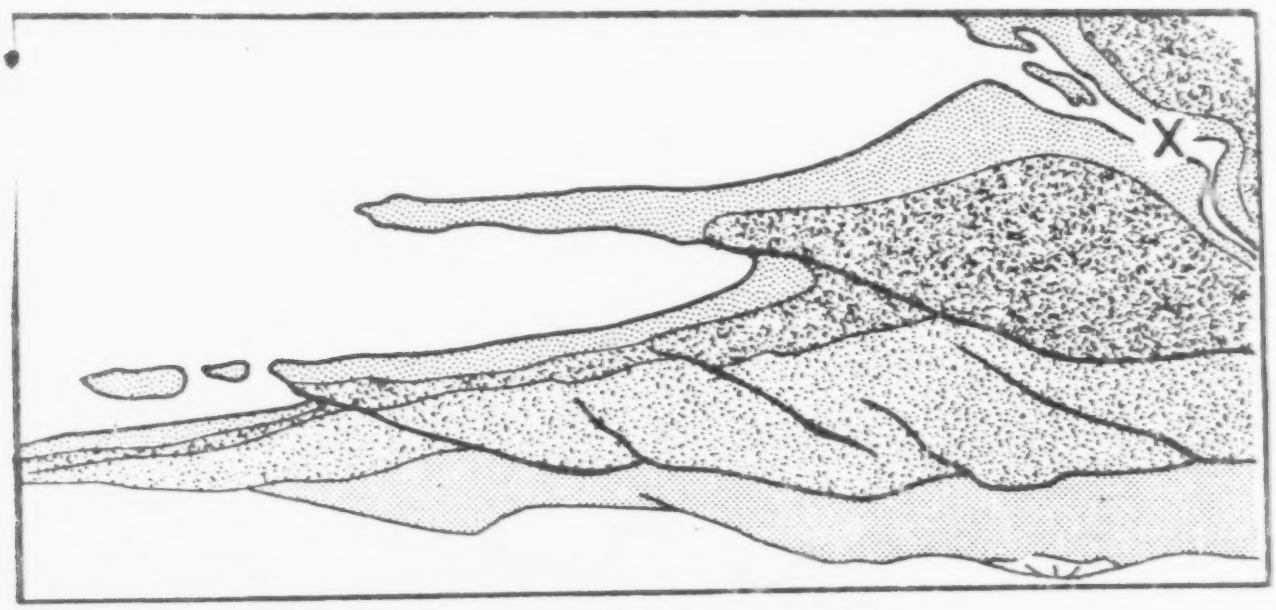
Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

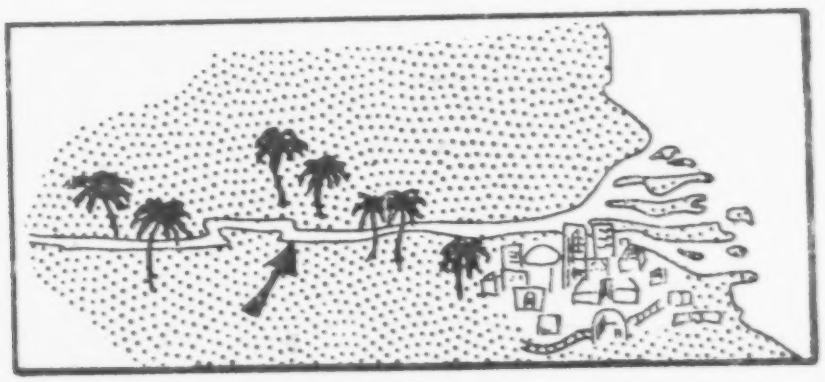
Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of river include:

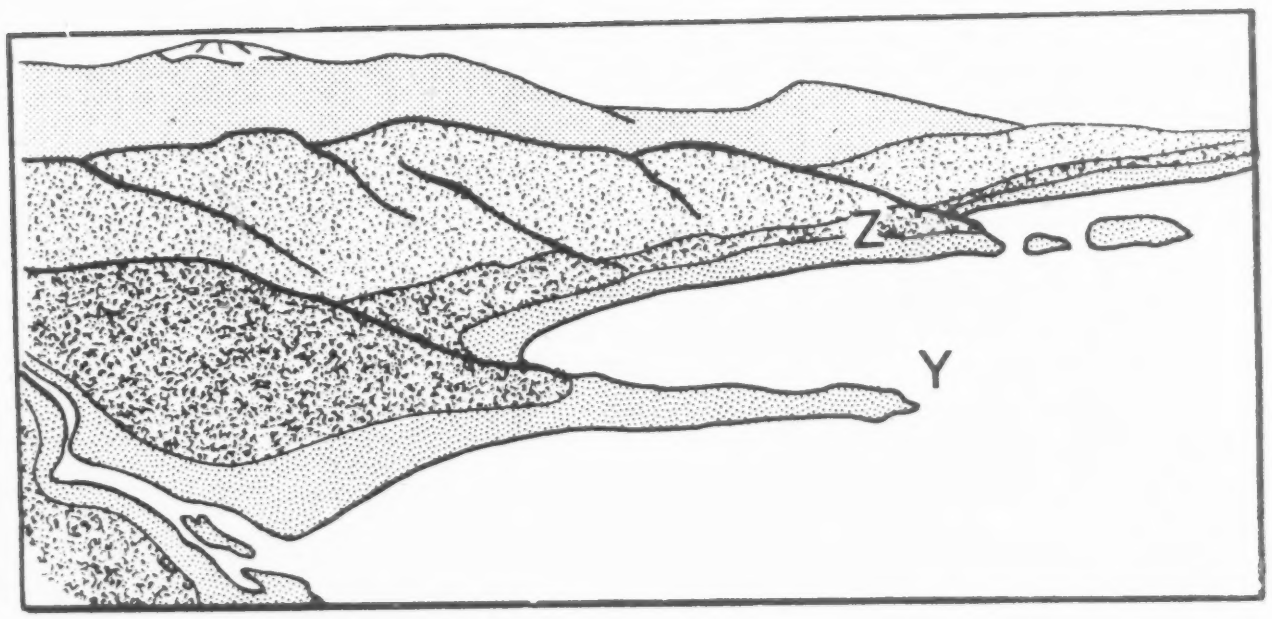
1. the elevation, speed, length, width, and direction of the stream
2. its geographic location, name, type of mouth
3. the particular kind or body of water into which the stream empties

Concept examples include the following:





Concept non-examples include the following:



Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely <u>not</u> be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A <u>river</u> is a natural water; a <u>canal</u> is a man-made waterway.

CONCEPT ANALYSIS

Target Concept Label:

River Mouth
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

A river mouth is a waterway through the place where a river enters a different body of water and ends.

(Definition Tested: A river mouth is the place where a river enters a different body of water and ends.)

Supraordinate Concept(s):

Waterway

Coordinate Concept(s):

Source
Tributary

Subordinate Concept(s):

Mouth with a delta

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A river mouth:
1. is part of a river
2. is where the river enters a different body of water
3. is where the river itself ends
4. is where the river current may slow, drop sediment
5. is the place where two bodies of water meet

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

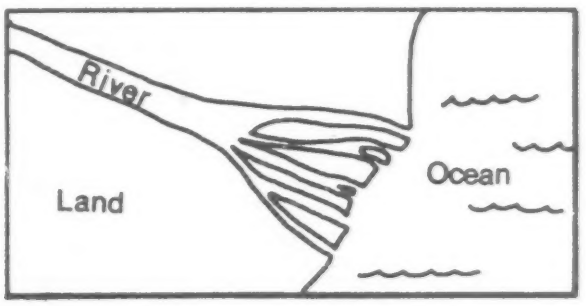
Other attributes relevant to river mouth are those of its supraordinate, <u>waterway</u>.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

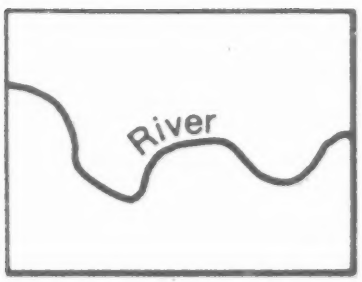
Irrelevant attributes of river mouth include:

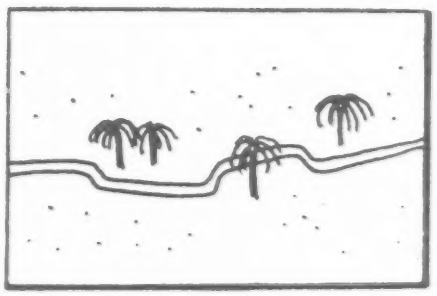
1. which particular river
2. the river's characteristics
3. what type or particular body of water the river mouth empties into

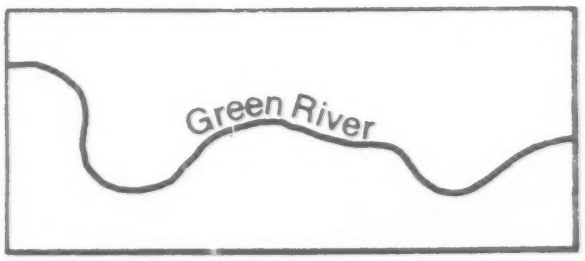
Concept examples include the following:



Concept non-examples include the following:







Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A river mouth sometimes flows into a gulf.

CONCEPT ANALYSIS

Target Concept Label:

Strait
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A strait is a waterway that is a narrow passage of water which connects two larger bodies of water.

(Definition Tested: A strait is a narrow passage of water which connects two larger bodies of water.)

Supraordinate Concept(s):

Waterway

Coordinate Concept(s):

Gulf	Ocean
River	Lake

Subordinate Concept(s):

A strait dividing 2 continents; dividing 2 parts of the same continent; between 2 oceans; between a sea and an ocean

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A strait:
1. is a narrow passage of water
2. connects 2 larger bodies of water
3. separates 2 pieces of land

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

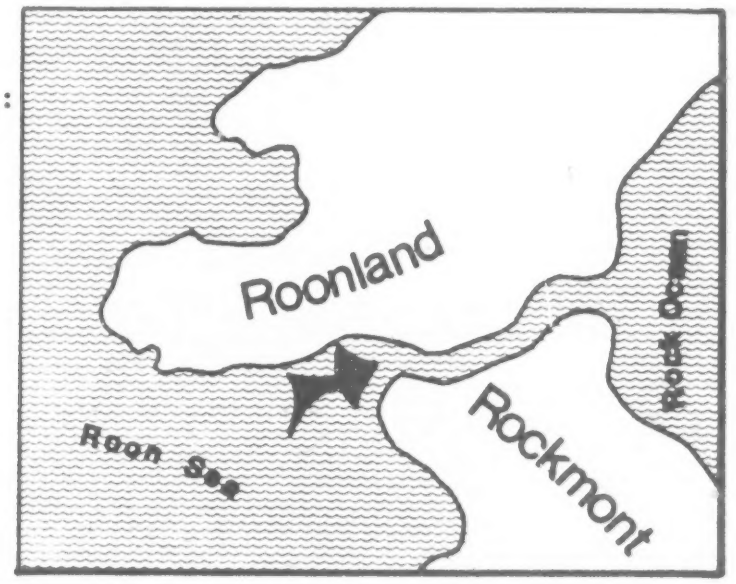
Other attributes relevant to strait are those of its supraordinate, waterway.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

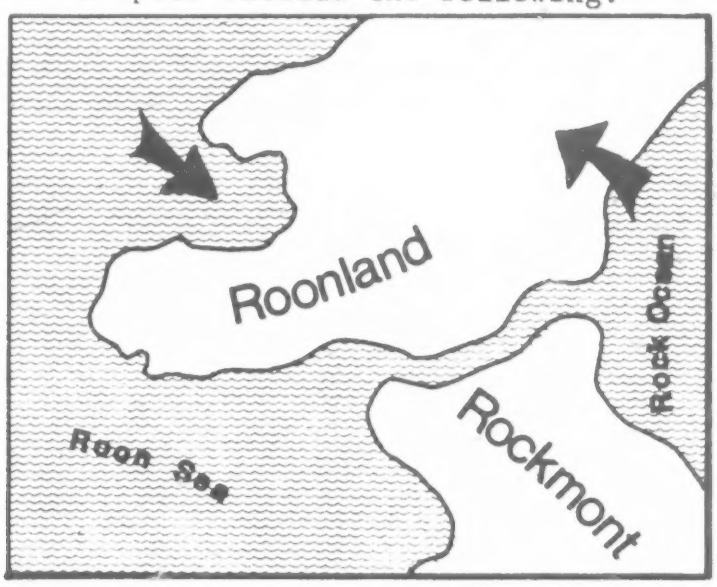
Irrelevant attributes of strait include:

1. its location, size, length
2. which lands and waters it separates and joins

Concept examples include the following:



Concept non-examples include the following:



Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Every strait is bordered by two coastlines.

CONCEPT ANALYSIS

Target Concept Label:

Tributary
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

A tributary is a river which runs into a larger river.

Supraordinate Concept(s):

River

Coordinate Concept(s):

Streams
Lakes

Subordinate Concept(s):

Creek

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A tributary:
1. is smaller than the river it runs into
2. is part of a river system which has a branching effect

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

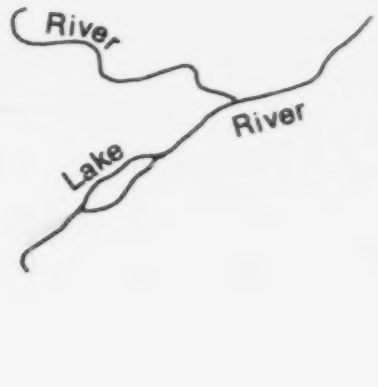
Other attributes relevant to tributary are those of its supraordinate, river.

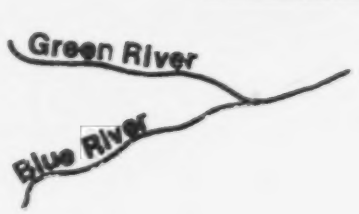
Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of tributary include:

1. its length, width, speed
2. position in a river system
3. whether or not it can be used by boats

Concept examples include the following:





Concept non-examples include the following:

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely <u>not</u> be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A <u>tributary</u> runs downhill into the <u>valley</u> of a large river.

CONCEPT ANALYSIS

Target Concept Label:

Tropical Region
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

The Tropical Region is a region of the earth north and south of the equator that is marked on maps.

(Definition Tested: The Tropical Region is a region of the earth around the equator.)

Supraordinate Concept(s):

World region

Coordinate Concept(s):

Arctic region
Temperate regions
Antarctic region

Subordinate Concept(s):

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

The Tropical Region:
1. is a "belt" around the earth
2. is near the equator
3. is located between the two "tropics" - Tropic of Capricorn and Tropic of Cancer.

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

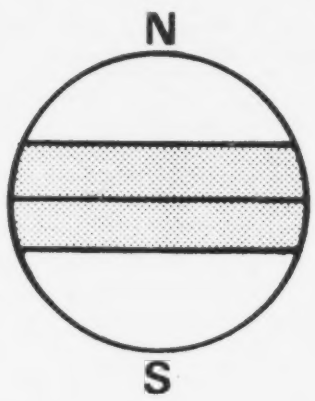
Other attributes relevant to Tropical Region are those of its supraordinate, mapping a world region; i.e., it is a man-made abstraction not readily observable on earth itself.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

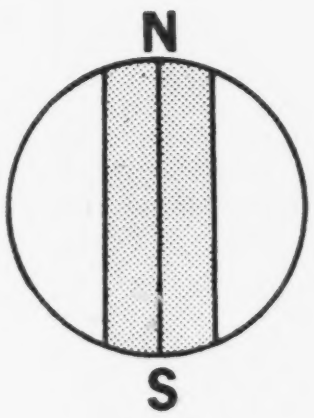
Irrelevant attributes of Tropical Region include:

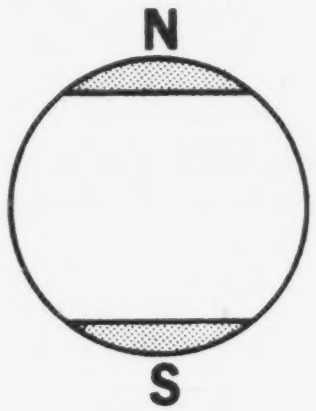
1. the exact location within the region: e.g., north or south of equator
2. what type of plants grow
3. topography of the land
4. what the temperature is
5. if the area is land or water

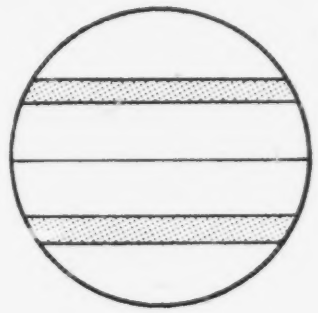
Concept examples include the following:



Concept non-examples include the following:







Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

The Tropical Region can be found on a globe.

CONCEPT ANALYSIS

Target Concept Label:

Gulf
(Area: Geographic Region)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

A gulf is a water area that is part of an ocean that is partly surrounded by land.

(Definition Tested: A gulf is a part of an ocean that is partly surrounded by land.)

Supraordinate Concept(s):

Water Area

Coordinate Concept(s):

Lakes
Seas

Subordinate Concept(s):

With a harbor
A bay

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A gulf:
1. is made by a coastline which partly surrounds the water area
2. is usually larger thanaa bay
3. is part of an ocean

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

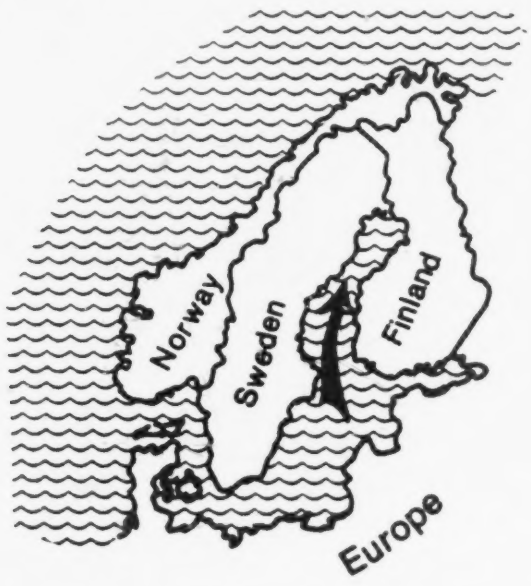
Other attributes of gulf are those of its supraordinate water area.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

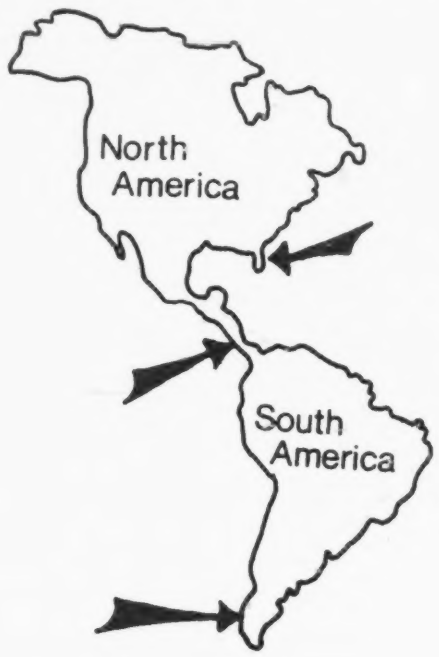
Irrelevant attributes of gulf include:

1. which particular ocean
2. the exact size, shape, location
3. how many or what rivers empty into it
4. whether or not it has any islands

Concept examples include the following:



Concept non-examples include the following:



Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A waterway can go through a gulf.

CONCEPT ANALYSIS

Target Concept Label:

Country
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A country is a political land region that is the area of land making up a nation.

(Definition Tested: A country is the area of land making up a nation.)

Supraordinate Concept(s):

Land region (on a political map)

Coordinate Concept(s):

Non-political map information such as physical features

Subordinate Concept(s):

A landlocked country

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A country:

1. is made up of people living under one political organization (a nation)
2. is marked by boundaries on maps and globes
3. has a name
4. has a capital or center of government which is marked on a map

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes relevant to country are those of its supraordinate, land region.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of country include:

1. its exact size
2. type of government
3. physical characteristics
4. if the boundaries are mountains or oceans or rivers or purely political agreements

Concept examples include the following:

United States

France

China

Switzerland

Concept non-examples include the following:

Alaska

North America

Europe

Africa

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

When political maps show countries, the boundaries of the countries are marked.

CONCEPT ANALYSIS

Target Concept Label:

Distance
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

A distance is a measurement that describes how far it is between two places.

(Definition Tested: A distance is how far it is between two places.)

Supraordinate Concept(s):

Measurement

Coordinate Concept(s):

Direction
Area

Subordinate Concept(s):

Height	Width
Depth	Length

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

Distance:

1. uses units of length to define measurement
2. is described in units of measure shown on map scale
3. describes how far apart 2 points are

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes relevant to distance are those of its supraordinate, measurement.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of distance include:

1. the particular map scale used
2. the particular measurement
3. which 2 points are measured between

Concept examples include the following:

3,000 miles	12,000 miles
1,760 yards	5,280 feet
3 1/2 miles	
1/2 inch	
3 inches	

Concept non-examples include the following:

3 million people

220 gallons

68 highways

5,280 pounds

30 inches or more of rainfall

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Distance and direction can be used to locate a place.

CONCEPT ANALYSIS

Target Concept Label:

East-West Lines of Latitude
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

The East-West lines of latitude are imaginary lines of location which run parallel to the equator and may be marked on a globe or flat map.

(Definition Tested: The East-West lines of latitude are imaginary lines which run parallel to the equator and may be marked on a globe.)

Supraordinate Concept(s):

Lines of location

Coordinate Concept(s):

North-South lines of longitude

Subordinate Concept(s):

The Tropics, Arctic Circle
The Equator, Anarctic Circle

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

East-West lines of latitude:

1. are imaginary lines (an abstract conception)
2. run east and west
3. measure distances north and south
4. run parallel to each other in concentric circles
5. establish direction and help you locate points
6. are described in degrees

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

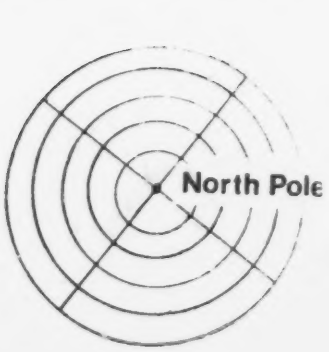
Other attributes relevant to East-West lines of latitude are those of its supraordinate, lines of location.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

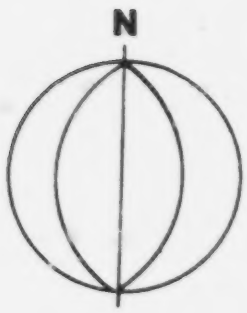
Irrelevant attributes of East-West lines of latitude include:

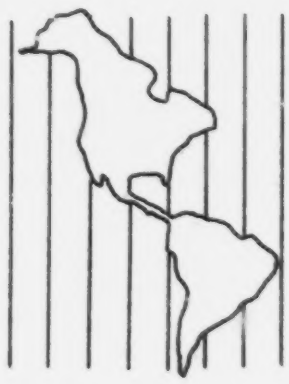
1. which line is described
2. how many are shown on a map
3. which part of globe is shown
4. size of map or globe

Concept examples include the following:



Concept non-examples include the following:





Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely <u>not</u> be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

<u>East-West lines of latitude</u> and <u>North-Wouth lines of longitude</u> cross each other.

CONCEPT ANALYSIS

Target Concept Label:

Globe
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A globe is a round ball that has a map of the earth drawn on it, showing continents and oceans.

Supraordinate Concept(s):

Map

Coordinate Concept(s):

Flat maps

Subordinate Concept(s):

Globes that are either physical feature maps, political maps, or symbol maps

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A globe:
1. is a round representation of the earth
2. is drawn to a scale (always smaller) than earth
3. shows continents and oceans

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes relevant to globe are those of its supraordinate, map.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of globe include:
1. what features are marked - physical or political
2. how the features are symbolized
3. the exact map scale used

Concept examples include the following:

Concept non-examples include the following:

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely <u>not</u> be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

The equator on a <u>globe</u> marks a line between only two <u>hemispheres</u>.

CONCEPT ANALYSIS

Target Concept Label:

Map Directions
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

Map directions are information found on a map that tells which way to go from any point on a map in order to face or move towards the North Pole.

(Definition Tested: A map direction tells which way to go from any point on a map in order to face or move towards the North Pole.)

Supraordinate Concept(s):

Map information

Coordinate Concept(s):

Distance
Area

Subordinate Concept(s):

Map directions are used to point to a place

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

Map directions:

1. are identified from or toward some point
2. can be any of the four basic directions or combinations of which all are related to each other in degrees and are two pairs of opposites - north-south, east-west
3. are marked on map to show the same relationship as the real world
4. are marked on map with a direction indicator
5. used in real world remain constant, i.e., North determined by North Star--others are in ^{o} relationships

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes of map directions are those of its supra-ordinate, map information.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of map directions include:

1. which direction is named
2. which one is at the "top" of the map
3. whether or not there is a starting or stopping point (i.e., a line going over the North Pole changes its direction from north to south; an east-to-west line is not affected unless the line is reversed)

Concept examples include the following:

north

north-east

south-east

Concept non-examples include the following:

836 miles

926 square miles

a compass

250 miles

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Travelers use map directions to find a waterway to a place.

CONCEPT ANALYSIS

Target Concept Label:

Map Measurement
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A map measurement is information from a map that finds the real distance between two places or the size of an area from a map.

(Definition Tested: A map measurement is finding the real distance between two places or the size of an area from a map.)

Supraordinate Concept(s):

Map information

Coordinate Concept(s):

Map directions

Subordinate Concept(s):

Measuring distance
Measuring area

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

Map measurement:
1. measures size
2. measures distance
3. is used to figure real distances from a map
4. uses a map scale

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes of map measurement include those of its supraordinate, map information.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of map measurement include:

1. what features, political or physical are marked
2. how features are symbolized
3. exact size -- or ratio of the scale used to earth

Concept examples include the following:

the river runs east for 50 miles

it is 112 miles from Chicago to Denver

it is 82 miles from Madison to Milwaukee

the area of Washington County is 5,000 square miles

Concept non-examples include the following:

it takes 45 minutes to get from one side of town to the other

there are 261,213 people living in that city today

215 trucks used the road last year

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely <u>not</u> be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

<u>Map measurement</u> on a <u>globe</u> is more like measurement on the earth than measuring on a flat map.

CONCEPT ANALYSIS

Target Concept Label:

Map Scale
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

A map scale is information from a map that is the part of a map that tells what a unit of distance on the map is equal to on the earth itself.

(Definition Tested: A map scale is the part of a map that tells what a unit of distance on the map is equal to on the earth itself.)

Supraordinate Concept(s):

Map information

Coordinate Concept(s):

Map direction

Subordinate Concept(s):

Inches-to-miles

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concept if a supraordinate has not been identified).

A map scale:
1. is part of a map
2. has the units of measure labeled
3. tells what distance on the map means about distances on the earth

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes relevant to map scale are those of its supraordinate, map information.

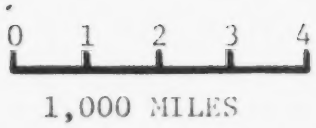
Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following;

Irrelevant attributes of map scale include:

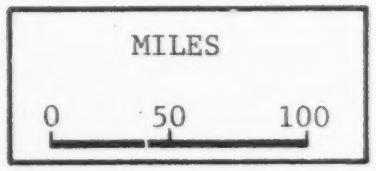
1. what units are used to express the relationship
2. how it is expressed

Concept examples include the following:

1 inch = 300 miles



1 inch = 200 miles



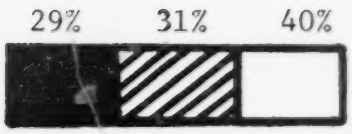
1 inch = 20 miles

Concept non-examples include the following:

2 pounds = 32 ounces

1 ton = 2,000 pounds

= Bicycle path



Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A map scale tells how much bigger the earth is than a globe.

CONCEPT ANALYSIS

Target Concept Label:

North-South Lines of Longitude
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

The North-South lines of longitude are imaginary lines of location which run from the North Pole to the South Pole and can be shown on a globe or flat maps.

(Definition Tested: The North-South lines of longitude are imaginary lines which run from the North Pole to the South Pole and can be shown on a globe.)

Supraordinate Concept(s):

Lines of location

Coordinate Concept(s):

East-West lines of latitude

Subordinate Concept(s):

Zero degrees at Greenwich, England
Time lines

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

The North-South lines of longitude:

1. are imaginary lines (an abstract conception)
2. run north and south
3. are used with East-West lines of latitude to measure distance east and west
4. help in locating points on the earth
5. intersect at the poles
6. are described in degrees
7. are all shown to be the same length on the same globe

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

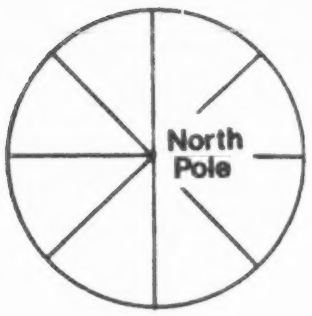
Other attributes relevant to North-South lines of longitude are those of its supraordinate, lines of location.

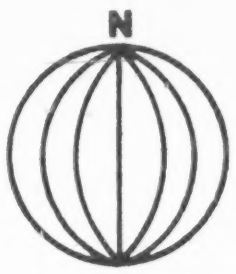
Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

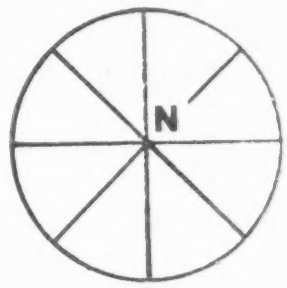
Irrelevant attributes of North-South lines of longitude include:

1. which exact degree, or line, is being mentioned
2. their exact location

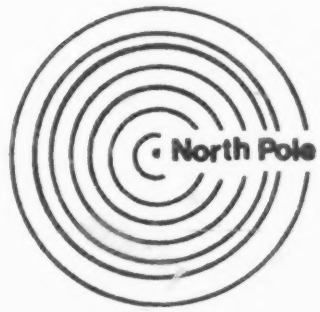
Concept examples include the following:







Concept non-examples include the following:



Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A sea captain might find his way by using North-South lines of longitude to follow his course on a map.

CONCEPT ANALYSIS

Target Concept Label:

Physical Feature Map
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A physical feature map is a map that is a drawing of part of the earth's surface using symbols, lines, or colors to show where and how high or deep are the lands and waters, and telling about plants on the land.

(Definition Tested: A physical feature map is a drawing of part of the earth's surface using symbols, lines, or colors to show where and how high or deep are the lands and waters, and telling about plants on the land.)

Supraordinate Concept(s):

Map

Coordinate Concept(s):

Political maps
Population maps

Subordinate Concept(s):

Globe
Flat map

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A physical feature map:

1. is a drawing of part or all of the earth's surface
2. uses symbols, colors, lines
3. shows geographic land and water features of an area
4. is drawn to scale
5. shows location
6. is viewed as it would be aerially

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

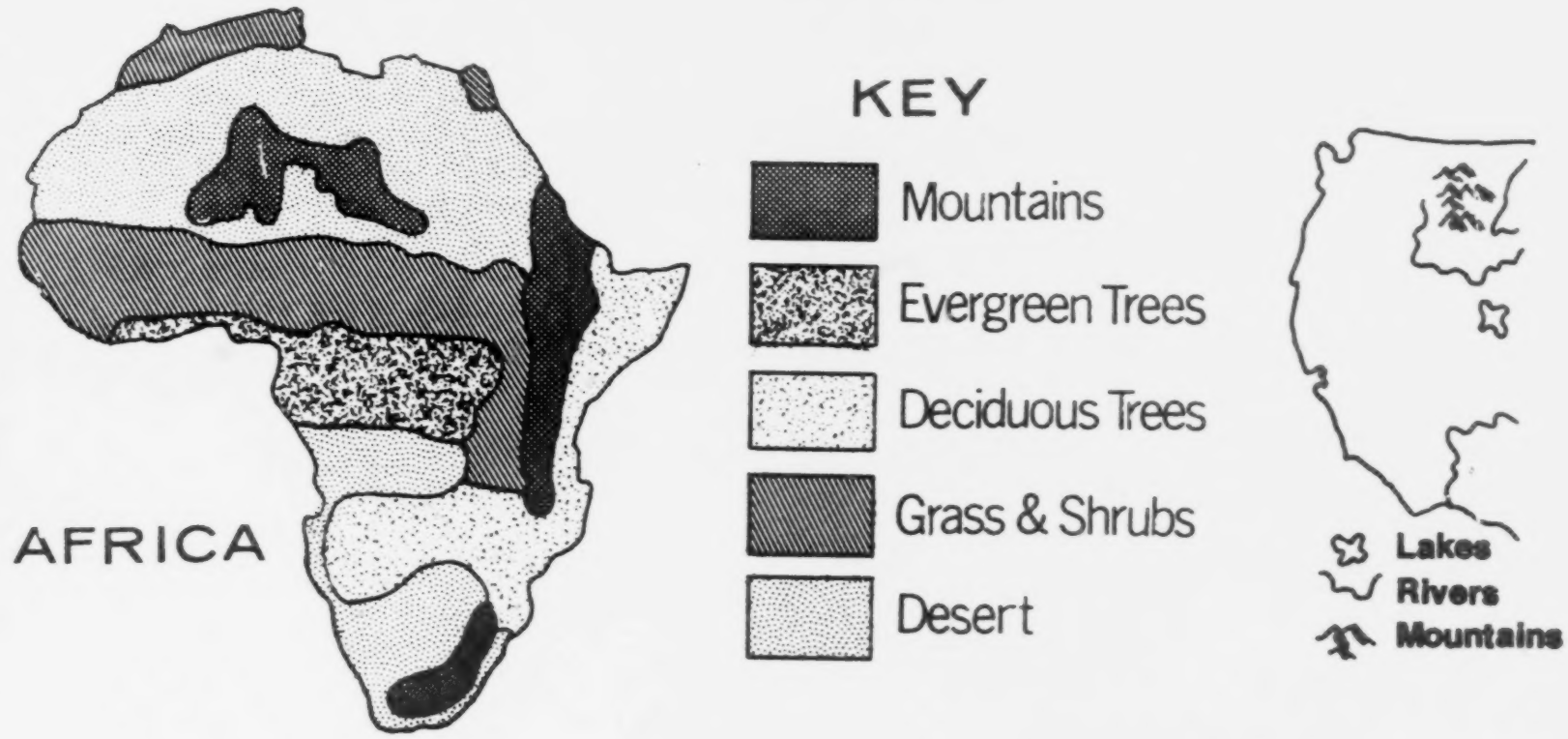
Other attributes relevant to physical feature map are those of its supraordinate, map.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of physical feature map include:

1. if area is named
2. whether map is round or flat
3. if political boundaries are marked
4. what map scale is used
5. how the features are distinguished - symbols, colors

Concept examples include the following:



Concept non-examples include the following:

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

A physical feature map which shows a desert will show any rivers which flow through the desert.

CONCEPT ANALYSIS

Target Concept Label:

Symbol Map
(Area: Map and Globe Study)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supra-ordinate concept, then all attributes of the target concept should be given.)

A symbol map is a map which is a drawing of part of the earth's surface and which uses small pictures or figures to stand for real things and shows where they are found.

(Definition Tested: A symbol map is a drawing of part of the earth's surface which uses small pictures or figures to stand for real things and shows where they are found.)

Supraordinate Concept(s):

Map

Coordinate Concept(s):

Physical feature map
Political map

Subordinate Concept(s):

Map of products
Map of crops
Maps of population

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A symbol map:
1. has symbols - abstract or pictorial
2. has a key to interpret symbols
3. represents real things
4. shows where things are found on earth

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

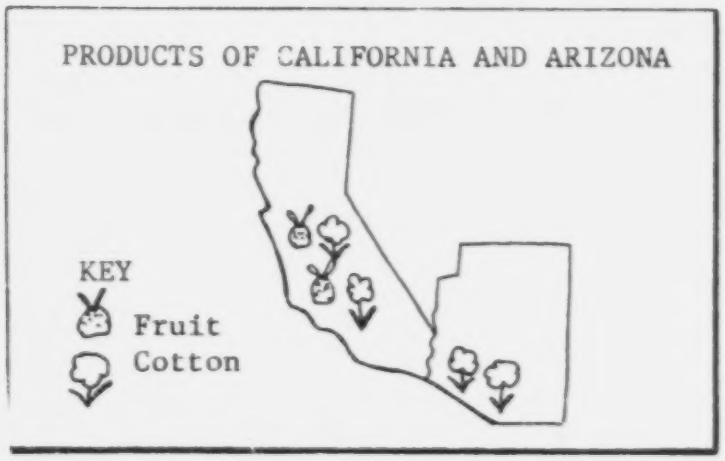
Other attributes relevant to symbol map are those of its supraordinate, <u>map</u>.

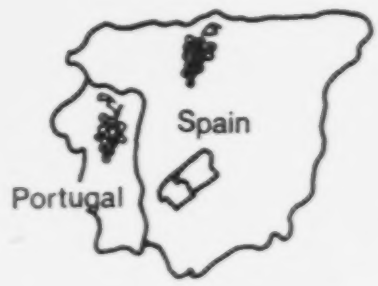
Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of symbol map include:

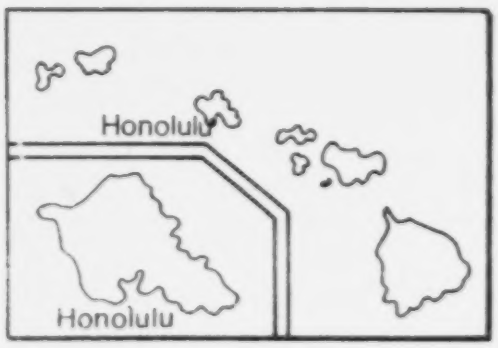
1. the number, type, use, size of symbols used
2. the place being mapped

Concpet examples include the following:





Concept non-examples include the following:



Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

When symbols on a symbol map are used to show physical features, it is also a physical feature map.

CONCEPT ANALYSIS

Target Concept Label:

Airway
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

An airway is a travel route that is a path of travel by airplane between 2 places on earth.

(Definition Tested: An airway is a path of travel by airplane between 2 places on earth.)

Supraordinate Concept(s):

Travel route

Coordinate Concept(s).

Land route
Waterway

Subordinate Concept(s):

Use - air freight; fast transportation of people
Which particular route

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

An airway:

1. has routes that are unmarked (in sky)--may be set at some points by airline controls
2. is usually faster than other means of travel--especially if the distance is great
3. is used by jets or prop airplanes
4. starts and stops at airports (on earth--2 points)
5. goes through the sky
6. is more likely to be between cities than unpopulated areas

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes of airway include those of its supraordinate, travel route.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of airway include:

1. actual distance
2. type of airplane
3. actual location
4. part of earth flown over
5. use of travel route
6. where route starts and stops

Concept examples include the following:

a route over the North Pole

a route through the clouds

a route from New York to London by airplane

a route over the ocean

Concept non-examples include the following:

a jet stream

an air current

a warm stream in an ocean

a mountain pass

a canal

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Most airways are between cities.

CONCEPT ANALYSIS

Target Concept Label:

City
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A city is a community of thousands of people living and working very close to one another.

Supraordinate Concept(s);

Community

Coordinate Concept(s):

Countryside
Suburbs

Subordinate Concept(s):

Capital city
Industrial city

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A city:

1. has a large population--its people live in close proximity, often live in apartments--many unit homes
2. has lots of traffic--many streets
3. has people of many different occupations
4. has a special government and city leaders

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes of city are those of its supraordinate community.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of city include:

1. exact location
2. race, religion, age, work of inhabitants
3. kind of homes and buildings--old, new, tall, multi-family, etc.

Concept examples include the following:

Chicago

Boston

Denver

Madison

Concept non-examples include the following:

Wisconsin

Canada

North America

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Much of the work in a city is exchange of goods and messages.

CONCEPT ANALYSIS

Target Concept Label:

Countryside
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A countryside is a community area where many of the people live on farms or ranches.

Supraordinate Concept(s):

Community

Coordinate Concept(s):

City
Suburbs

Subordinate Concept(s):

Ranching - cattle area
Crop-raising area
Forestry area

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A countryside:

1. has few people living in a large land area
2. has some small villages
3. has special industries - largely agricultural
4. has some special buildings - barns, silos

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not specified.)

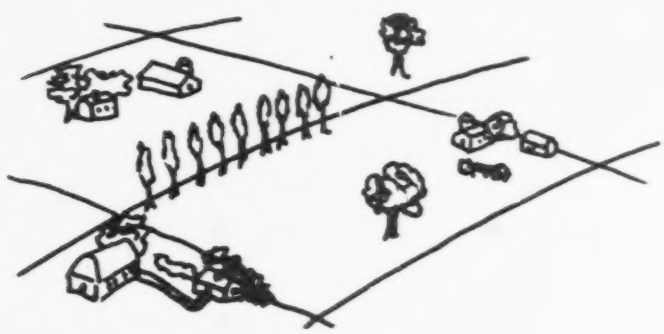
Other attributes relevant to countryside are those of its supraordinate, community.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

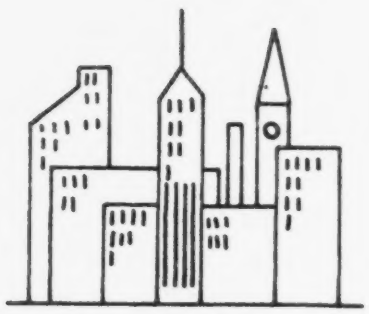
Irrelevant attributes of countryside include:

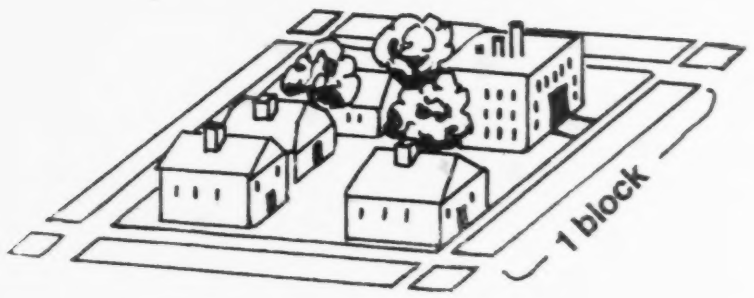
1. type of farms or ranches the people live on
2. exactly how they earn their living
3. how close particular individuals may live to one another
4. size of the farms or ranches

Concept examples include the following:



Concept non-examples include the following:





Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Most people live closer together in cities than in the countryside.

CONCEPT ANALYSIS

Target Concept Label:

Democracy
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A democracy is government by the people who live under it.

Supraordinate Concept(s):

Government

Coordinate Concept(s):

Monarchy
Dictatorship

Subordinate Concept(s):

Representative type of law-making
Law-making by vote of every citizen on each law

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A democracy:

1. is a government in which each person has a right to take part in the government and people take part by selecting leaders and making laws (usually by voting)

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes of democracy are those of its supraordinate, government.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of democracy include:

1. particular country; particular level of government
2. number of leaders
3. voting age
4. how many people run for president
5. how laws are made
6. whether representative of total democracy
7. men or women running for offices
8. what the laws are

Concept examples include the following:

each member of the class has a chance to vote on where their picnic will be held

the class votes to choose between two different picnic spots for the end of the year class picnic

almost all the children agree to go to the zoo

every member of the sixth grade class has a chance to vote for one of two students to be their class president

Concept non-examples include the following:

the teacher of the class decides where the class picnic will be held after most children said they wanted to choose the place by voting

the class votes to have the prettiest girl be class president; the teacher choses the smartest girl

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

News moves freely in a democracy.

CONCEPT ANALYSIS

Target Concept Label:

Exchange
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

Exchange is trading one thing, idea, or message for another which is the basis for people to be able to live and work together.

(Definition Tested: Exchange is trading one thing, idea, or message for another.)

Supraordinate Concept(s):

Ways that people live and work together

Coordinate Concept(s):

Conquest
Self sufficiency

Subordinate Concept(s):

Trade
Discussion

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

Exchange:
1. is for two or more people - or two or more groups of people
2. is based on there being something to trade
3. is the act of trading or communicating

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes of exchange include those of its supraordinate, people living and working together.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of exchange include:

1. type of transaction
2. who is involved
3. what is exchanged

Concept examples include the following:

paying money to a state to use its highways

Steve and Amy and Peggy are selling lemonade to their friends for 3¢ a glass

Amy and Peggy are talking about what they want to do on Saturday

Lou gives six blue marbles for five of Harry's red marbles

Concept non-examples include the following:

Steve's climbing the oak tree in his backyard

Lou watches Harry play marbles on the sidewalk

Sarah has two turtles and Donna has five tadpoles

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Exchange is a kind of trade that can take place in the countryside.

CONCEPT ANALYSIS

Target Concept Label:

Government
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A government is an organization that determines the way groups of people are ruled.

(Definition Tested: A government is the way groups of people are ruled.)

Supraordinate Concept(s):

Organization

Coordinate Concept(s):

Societies
Economies

Subordinate Concept(s):

Democracy
Monarchy

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A government:

1. is an organization
2. is a political unit usually
3. makes rules and laws which define fairness or right and wrong and state the freedoms: e.g., what is allowed
4. enforces the laws
5. has leaders and followers

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes relevant to government are those of its supraordinate, organization.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of government include:

1. level of the organization--church, school, state, national
2. location
3. what people are ruled
4. who is leader
5. how leader is chosen
6. what the laws are
7. what is right and wrong

Concept examples include the following:

children make rules about who gets to use the class football

the people are voting for President

one of three men on a space flight is the captain of the ship

the village chief is telling his tribe what kinds of seeds they are allowed to plant

Concept non-examples include the following:

the school band is marching in a parade in front of the Governor

the President of the United States goes to a movie

a movie star names a new hospital ship

two United States Semators play golf with a Federal Judge

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Countries are ruled by their governments.

CONCEPT ANALYSIS

Target Concept Label:

Land Route
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A land route is a travel route that is the path of travel between two places on a road, highway, or railroad.

(Definition Tested: A land route is the path of travel between two places on a road, highway, or railroad.)

Supraordinate Concept(s):

Travel Route

Coordinate Concept(s);

Airway
Waterway

Subordinate Concept(s):

Railroad
Highways
Streets
Paths

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A land route:

1. is built on land rather than in the air or on water; i.e., can be seen on the land
2. uses train tracks or leveled roads or highways or paths
3. is used by automobilies, trains, or bicycles, people on foot

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes of land route are those of its supraordinate, travel route.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of land route include:

1. distance covered
2. type of terrain in the area
3. people using them
4. type of vehicle
5. area they go through--rural or urban
6. type of path--tracks or road

Concept examples include the following:

a road between two airports

a highway across a state

a railroad across Canada

Concept non-examples include the following:

a route across a lake

a shipping route across an ocean

a river between two states

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Traveling by land routes is usually slower than traveling by airways.

CONCEPT ANALYSIS

Target Concept Label:

News
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

News is a communication about events which have just taken place.

(Definition Tested: News is events which have just taken place.)

Supraordinate Concept(s):

Communication (exchange)

Coordinate Concept(s):

History
Fiction

Subordinate Concept(s):

Sports news
National and international news
Local news

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

News:

1. has happened recently
2. is about people and things
3. is often factual
4. is reported through several media: e.g. may be reported in several ways

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes of news are those of its supraordinate, communication.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of news include:

1. who the news is about
2. how the news is reported
3. what the news is about

Concept examples include the following:

this morning a space flight was made toward Mars

Stuart's little sister, Susie, took her first step this morning

three astronauts started on a moon trip at 3:21 P.M.

the Golden Raiders defeated the Raw Hides, 21 - 7 this morning at Hooker Stadium

the mayor of Waterloo, Ohio, left on a trip to visit Japan today

Concept non-examples include the following:

in 1492 Columbus discovered America

what time is it (?)

Mary had a little lamb, its fleece was white as snow

the United States was first to land men on the moon

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Some people know about an organization only because it has been in the news.

CONCEPT ANALYSIS

Target Concept Label:

Organization
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

An organization is a group of people who do things together because they have the same interests or problems.

Supraordinate Concept(s):

Group

Coordinate Concept(s):

Institution

Subordinate Concept(s):

Club, team, troop, pack

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

An organization:

1. is made of a group of two or more people
2. has rules--often a leader or officer(s)
3. has members who co-operate with one another on a common problem or purpose

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes relevant to organization are those of its supraordinate, group.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept include the following:

Irrelevant attributes of organization include:

1. particular interest or problem of the group
2. the age, sex, race, etc., of the members and leaders

Concept examples include the following:

a girl scout troop

The United Nations

the school safety patrol

the baseball team in your neighborhood

the Fishing and Hunting Club

Concept non-examples include the following:

all the people driving down Pine Street

the President of the United States

the children playing at the beach

the children at the zoo

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Families are organizations to take care of basic needs.

CONCEPT ANALYSIS

Target Concept Label:

Waterway
(Area: Man and Society)

Definition that gives the name of the supraordinate concept and the criterial attributes of the target concept. (If there is no supraordinate concept, then all attributes of the target concept should be given.)

A waterway is a travel route that is the path of travel between two places on a river, ocean, lake, or canal.

(Definition Tested: A waterway is the path of travel between two places on a river, ocean, lake, or canal.)

Supraordinate Concept(s):

Travel route

Coordinate Concept(s):

Airway
Land route

Subordinate Concept(s):

A route across an ocean
A route through locks, canals
A river route; a route through lakes

Criterial attributes that identify the target concept within the selected supraordinate concept (or coordinate concepts if a supraordinate has not been identified).

A waterway:

1. crosses a body of water
2. is used by boats
3. is not marked in the water
4. can use locks and canals

Other attributes that are relevant but not criterial for the target concept include the following: (The attributes of the supraordinate need not be specified.)

Other attributes relevant to waterway are those of its supraordinate, travel route.

Irrelevant attributes of the target concept (attributes which vary among instances of the target concept) include the following:

Irrelevant attributes of waterway include:

1. size and shape of the body of water
2. what kinds of boats use it
3. how long the route is
4. purpose of the travel route

Concept examples include the following:

a route across an ocean

a route from one part of the country to another part by river

a path of travel through the Great Lakes

Concept non-examples include the following:

a route over the top of the mountains

a path from your house to a friend's house

an airplane route over a large lake

Relationship with at least one other concept. (This relationship should preferably be a principle. It should definitely not be a direct supra-ordinate-subordinate relationship, a relationship involving a criterial attribute, or a relationship involving an example.)

Oceans are international waterways.